

Yellingbo Investigation Draft Proposals Paper

FOR PUBLIC COMMENT



December 2012

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The Victorian Environmental Assessment Council (VEAC) was established under the *Victorian Environmental Assessment Council Act 2001*. It provides the State Government of Victoria with independent advice on protection and management of the environment and natural resources of public land.

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Mr Ian Harris
Dr Charles Meredith
Mr Ian Munro PSM
Ms Angela Reidy

Community Reference Group

The Yellingbo Investigation Community Reference Group is independently chaired by Mr Don Saunders.

Membership consists of:

Mr Ben Cullen, *Trust for Nature*
Mr David Finger, *Victorian Farmers Federation*
Mr Phil Ingamells, *Victorian National Parks Association*
Aunty Diane Kerr, *Wurundjeri Tribe Land & Compensation Cultural Heritage Council Inc*
Mr Jeff Latter, *Woori Yallock Creek Park Alliance*
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Ms Mary-Kate Hockey (Mr Adam Shalekoff to May 2012),
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Mr Marty White, *Yarra Ranges Council*

HOW TO MAKE A SUBMISSION

Written submissions are invited on this draft proposals paper.

The closing date for submissions is **4 March 2013**.

You may make an online submission via VEAC's website at www.veac.vic.gov.au or send your written submission by post or by email (see contact details). Only submissions sent directly to VEAC will be treated as submissions.

There is no required format for written submissions, except that you must provide your name and your contact details, including an email address if you have one. All submissions will be treated as public documents and will be published on VEAC's website. The name of each submitter will be identified as part of each published submission, but personal contact details will be removed before publication.

Confidential submissions are discouraged. If there are exceptional circumstances that require confidentiality, please contact VEAC before making your submission.

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Acknowledgment of Country

The Victorian Environmental Assessment Council acknowledges and pays its respects to Victoria's Native Title Holders and Traditional Owners within the investigation area, and the rich cultural and intrinsic connection they have to Country. The Council also recognises and acknowledges the contribution and interest of other Aboriginal peoples and organisations in the management of land and natural resources.

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Foreword

The modest size of VEAC's Yellingbo investigation area can disguise the large community of interest and the wide range of issues to be addressed. The area is famously home to three state animal and plant emblems, but also to a broad range of other significant natural values, as well as an extraordinary range of agricultural enterprises and popular recreational attractions for local residents and visitors from the nearby major population centre of Melbourne.

However, the combination of so many demands in such a small area has led to substantial pressures on the environment that underpins these values and uses, particularly when the public land area is small in extent and highly fragmented. Over many decades, local residents, community groups and government agencies have worked hard to protect the environment from these threats and have been successful in arresting the decline and averting the extinction of species such as the helmeted honeyeater and Leadbeater's possum. However, reversing the trend and initiating recovery has proved difficult and many values remain disturbingly vulnerable to threats in the future.

While it is important to make the most effective use of the limited opportunities in the reallocation of public land, the real challenge for VEAC has been to find new ways to most effectively assist and strengthen the great variety of work that is currently being carried out. The culmination of this draft proposals paper is the set of draft recommendations made in response to this challenge—as a starting point for community discussion and input.

The key element of the draft recommendations is the establishment of an overarching State Emblems Conservation Area to bring together and coordinate existing and new nature conservation activities and thereby maximise the overall effectiveness of the work, increase its profile and build further support.



● Council members (left to right): Charles Meredith, Phil Honeywood (Chairperson), Ian Harris, Angela Reidy, Ian Munro

It is an appropriate time to be considering new approaches to habitat fragmentation and biodiversity decline in the investigation area, with the focus on increasing resilience and connectivity across the landscape outlined in the Victorian Government's Environmental Partnerships plan, and the recent launch of other relevant initiatives such as Zoos Victoria's Fighting Extinction program and the Australian Government's National Wildlife Corridors Plan.

The Council is looking forward to an engaging and interactive period of public consultation and encourages everyone with an interest in this remarkable area to become involved.

Phil Honeywood
Chairperson

Structure of this Draft Proposals Paper

This draft proposals paper is the first report for the Yellingbo Investigation. For this investigation there is no separate discussion paper required. With such a tightly focused task, preparation of comprehensive background material is not required but sufficient background material is provided to set the context and rationale for the draft recommendations. Readers seeking more detailed information related to public land use and natural values across this region are directed to the comprehensive compilation by the Land Conservation Council in its 1991 Melbourne District 2 Review descriptive report, available on the VEAC website www.veac.vic.gov.au.

The biodiversity and ecological values are documented for the investigation, major issues and future threats to those values are identified, and the draft recommendations for appropriate future management arrangements are presented for public comment.



This draft proposals paper has five chapters:

Chapter 1

Chapter 1 introduces the investigation, providing some context and a summary of the issues raised during public consultation.

Chapter 2

Chapter 2 identifies biodiversity, ecological and other values.

Chapter 3

Chapter 3 describes the current extent and use of public land.

Chapter 4

Chapter 4 outlines the relevant community and government programs and activities in the investigation area relating to protection of biodiversity and ecological values.

Chapter 5

Chapter 5 presents the draft recommendations.

References

References are provided as endnotes in the order of citation in the draft proposals paper.

Appendices

Appendices 1 to 4 consist of information on:

- submissions received in the first formal submission period for the investigation
- threatened flora and fauna species recorded in the investigation area
- protected area status of ecological vegetation classes (EVCs)
- protected areas in the investigation area.

Maps

Maps showing current and proposed public land use, current EVCs and native vegetation site condition are inserted in the rear pocket of the report.

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Executive summary

In August 2011, the Minister for Environment and Climate Change requested the Victorian Environmental Assessment Council (VEAC) to investigate public land in the Yellingbo area, focusing on its biodiversity and ecological values and arrangements to conserve and enhance these values.

Scope of the investigation

The purposes of the investigation are to:

- a** identify the biodiversity and ecological values in the specified area
- b** identify the current and likely future threats to these values and opportunities to reduce or remove these threats; and
- c** make recommendations for appropriate management arrangements to conserve and enhance the biodiversity and ecological values.

The full terms of reference are provided in section 1.3.

Consultation process

More than 70 submissions were received in response to the Notice of Investigation published in November 2011. The submissions can be viewed on VEAC's website. In addition, VEAC set up an online forum for people to raise issues and make comment. More than 500 people visited the forum and 16 comments were posted.

A Community Reference Group was established for the investigation and has met four times to date, including a workshop in March 2012 which was attended by a wider group of stakeholders. The membership of the Community Reference Group is listed on the inside front cover.

The public consultation process is described in more detail and the issues raised to date are explored in section 1.7.

In preparing this Draft Proposals Paper, VEAC also sought assistance from government agencies, community organisations and interested individuals, particularly Yarra Ranges Council, Melbourne Water, Zoos Victoria, Parks Victoria and the Department of Sustainability and Environment. VEAC is extremely grateful for the assistance of all people and organisations who have contributed to the investigation.

Current management for biodiversity

The area of the Yarra Valley centred around Yellingbo is rich in biodiversity and ecological values, including several values that are not found anywhere outside the investigation area. It is also an important and popular area for a broad cross-section of commercial and recreational uses, particularly intensive horticulture, viticulture, beef production, tourism, nature study, horse riding, and a variety of day visitor attractions such as Puffing Billy and the Lilydale-Warburton rail trail.

This diversity of uses has led to a range of pressures on the relatively limited areas of public land and native vegetation that link this area with the adjoining larger blocks in the Dandenong Ranges to the west and Yarra Ranges to the east. Some of these pressures threaten the area's important natural values.

As a result, the area has a long history of community engagement aimed at conserving the natural values. Over many decades, thousands of people in community groups, local government and state government agencies have worked on numerous programs and less formal activities in almost every part of the investigation area.

Prominent themes of these activities have been the protection and enhancement of stream frontage habitat, weed control, the development of cross-tenure biolinks, and the augmentation and consolidation of the protected area network. These activities have prevented the loss of many natural values but recovery has proved to be elusive for many values and there is a widely perceived need for renewed effort.

Draft recommendations

The limited extent of public land, especially land that is not strongly committed to an existing use, and its highly fragmented configuration, constrains options for VEAC to recommend extensive changes to the current allocation of land to the various public land use categories. Nonetheless, Council strongly supports the community call for significant change to management arrangements to conserve and enhance biodiversity values in the investigation area.

VEAC is recommending—for public comment—an approach that brings together land managed for nature conservation in a variety of categories under an overarching State Emblems Conservation Area. The draft recommendations in this report cover the land to be included in the Conservation Area, and the establishment and operation of a formal management agreement between the relevant agencies to oversee and direct management of the Conservation Area through a Management Committee of key public land managers. The Management Committee is recommended to

be supported by an advisory group of community representatives spanning the range of interests across the investigation area.

The concept is most easily understood through its similarity to ‘parklands’ that have been set up along urban waterways in many places (outside the investigation area). These parklands bring together land under a variety of tenures, such as local government land and land owned or managed by a variety of state government agencies, to provide a coherent identity for the community. The key stakeholders are recreational users such as walkers and cyclists, who are able to follow a trail along a waterway without being conscious that they are traversing land under many tenures and management responsibilities.

VEAC has a similar vision for the Yellingbo investigation area – with nature conservation as a primary management objective across a coordinated and unified area of public land. The proposed State Emblems Conservation Area brings together existing public land with high current or potential value for nature conservation, and encompasses a core area and a supplementary area. The core area includes nature conservation reserves, two Trust for Nature protected areas, and some key stream frontages. The supplementary area is public land of smaller extent retained in a variety of other land categories, including

land where there are additional management objectives of comparable priority to nature conservation. By drawing together land under a variety of tenures and managers, the State Emblems Conservation Area will provide a more robust, clearer and better coordinated arrangement for stakeholders and for the conservation of natural values. Full details of this model and its rationale are provided in chapter 5. Implications for horse riding and for public stream frontages are also detailed in chapter 5.

In addition to the recommendations for the State Emblems Conservation Area, there are several recommendations addressing a number of other issues.

The recommendations are listed below (see chapter 5 for full text). They may be divided into three groups:

- ✦ recommendations that apply generally across the investigation area: R1-R3
- ✦ recommendations that apply to the State Emblems Conservation Area: R4-R6
- ✦ recommendations that apply to specific public land use categories (A-F) within or outside the State Emblems Conservation Area, or specific public land units (A1-A2)

The implications of the recommendations for public land use categories are documented in the table overleaf.

Summary list of draft recommendations

General recommendations

R1	Implementation resources
R2	Resources for ongoing land management
R3	Interim management, minor boundary adjustments and boundary survey
R4	State Emblems Conservation Area
R5	Management Committee for the State Emblems Conservation Area
R6	Management Agreement for the State Emblems Conservation Area
A	Nature conservation reserves
B	Trust for Nature protected areas
C	Natural features reserves
D	Services and utilities areas
E	Regional park, state forest, historic and cultural features reserves and community use areas
F	Uncategorised public land

Recommendations for public land units

A1	State Emblems Nature Conservation Reserve
A2	Coranderrk Nature Conservation Reserve

Summary of draft recommendations for each public land use category

Public land use categories	Area (ha)	
	Current	Proposed
Nature conservation reserve	1489	1999
Trust for Nature protected area	14	14
Natural features (conservation) area	332	205
<i>Natural and scenic features area</i>	0.1	0.1
<i>Bushland area</i>	311	184
<i>Streamside area</i>	21	21
Natural features (other) area	874	776
<i>Stream frontage (including stream beds and banks)</i>	873.7	776
<i>Natural features area (general)</i>	0.3	0.3
Water production area	0.4	0.4
Historic and cultural features reserve	46	46
Community use area	601	323
State forest	2.4	2.4
Regional park	19	19
Services and utilities area	2593	2586
<i>Road</i>	2373	2366
<i>Water and sewerage services</i>	207	207
<i>other services and utilities areas</i>	13	13
Uncategorised public land	18	18
Total extent of public land in the investigation area	5990	5990
Total extent of investigation area (all private and public land)	51,370	51,370

Note:

Much of the public land in the investigation area is recommended to be managed under the State Emblems Conservation Area (recommendations R4-R6). The conservation area includes land in several different categories including some where no change in public land use category is recommended, i.e. a change in management arrangements is recommended but not necessarily a change in category. Recommendations relating to possible future changes to natural features reserves – stream frontages, as a result of phasing out licensed grazing, are not reflected in this table.

1 Introduction

1.1 Background

The Yellingbo investigation area (51,370 hectares) is located in the Upper Yarra Valley and centred on Yellingbo township, about 50 kilometres east of Melbourne (figure 1.1). It encompasses the valleys and low hills between the prominent peaks of the Dandenong and Yarra ranges. The towns of Woori Yallock, Launching Place, Yarra Junction, Hoddles Creek, Cockatoo, Emerald, Monbulk and Seville are in the investigation area. Lilydale, Healesville, Warburton and Gembrook lie just outside the boundary. Most of the investigation area is within the municipality of the Yarra Ranges Council with approximately 12 per cent of the southern area within Cardinia Shire. Melbourne's urban periphery (the peri-urban area) consists of inner and outer peri-urban zones.¹ The investigation area is within the inner 'green belt' zone extending from the urban growth boundary (UGB) to the outer rural boundaries of the 17 fringe area municipalities, which include Yarra Ranges and Cardinia. (The outer peri-urban zone includes the next band of eight rural municipalities and their regional cities and townships.) Most of the investigation area is also within the largest of Melbourne's 12 Green Wedges—the Yarra Valley, Yarra and Dandenong Ranges Green Wedge.²

The Yarra Valley is known for its range of natural features and agricultural produce, particularly its high quality cool climate wines, orchard fruits and berries. The mosaic of rural agricultural and natural environments provides an attractive landscape and is popular for a variety of recreational activities. Many residents and visitors from Melbourne make use of the local attractions for picnicking, bushwalking, nature study, food and wine tourism, horse riding, cycling and camping.

Like other areas in Melbourne's peri-urban region, the adjoining metropolitan areas exert strong regional impacts by acting as sources of demand for amenities and values and by attracting residents to employment, recreational and cultural opportunities. Conflict between land uses in

peri-urban areas is caused by the significance of locations and assets, differing values and expectations among land users about the use of these assets, and the range of existing and potential incompatible uses. The role of planning in peri-urban areas has come to include farmland protection, the protection of ongoing agricultural activity from conflicting and competing land use, the prevention of disordered and inefficient urban settlement forms, and the protection of rural landscapes and habitats.¹

Demographic change in this peri-urban setting brings a range of additional challenges for planning and land management authorities. Within the investigation area, there are conflicting trends with increasing demand for housing and residential development in the areas closer to Melbourne, and an overall forecast of a decreasing or very low population growth for the Yarra Ranges local government area in the short to medium term.^{3,4} Current community aspirations appear to reflect a high level of environmental awareness and a desire for an active role in environmental stewardship and improving the natural environment.

The extent of public land in the investigation area is limited, comprising some 11 per cent of the entire investigation area (5990 hectares), but there are significant tracts of state forest, and national and regional parks immediately adjoining the area. Around half of the original vegetation remains across the entire investigation area, although this is patchy in distribution. Only 13 per cent of this 24,600 hectares of remaining native vegetation is on public land, i.e. some 87 per cent of the remaining vegetation is on private land. Past clearing for agriculture has been most intense in the western part of the investigation area, particularly on the highly productive eastern slopes of the Dandenong Ranges. Map A (back pocket) shows current public land use in the investigation area.

The Yarra River, declared a heritage river in 1992, crosses the investigation area from Millgrove to near Healesville. It is joined by several major northerly flowing tributaries—Woori Yallock, Cockatoo, and Hoddles creeks and Little Yarra River—that drain nearby ranges and

meander into a broad alluvial plain. In many instances, narrow corridors adjoining these streams are almost the only public land retained. These ribbons of vegetation provide some physical connection across the landscape. Away from streams, most of this landscape was long ago developed for agriculture. Hydrological changes caused by this land use have affected the quality of the remnant native vegetation, often resulting in 'die back' of vegetation in swampy low-lying environments. In turn, the fauna populations that once occupied these areas have significantly declined or become locally extinct.

The current remnant of the original landscape in public ownership is now a stronghold for endangered species. In the investigation area conservation reserves totalling some 1800 hectares protect many threatened plants and animals including helmeted honeyeater, Leadbeater's possum, powerful owl, growling grass frog, swamp skink, tall astelia lily, and Emerald star-bush. Three nationally threatened animals are found within the Yellingbo Nature Conservation Reserve (661 hectares): helmeted honeyeater, Leadbeater's possum and growling grass frog as well as the only remaining patch (200 hectares) of the Sedge-rich *Eucalyptus camphora* Swamp vegetation community, which is listed under both the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the Victorian *Flora and Fauna Guarantee Act 1988*. This core area of high conservation value on public land has been expanded by substantial land purchase and donation over the last 40 years.

An extensive network of community organisations such as Friends groups and Landcare organisations, as well as public land management committees and government bodies have been working over many decades to improve

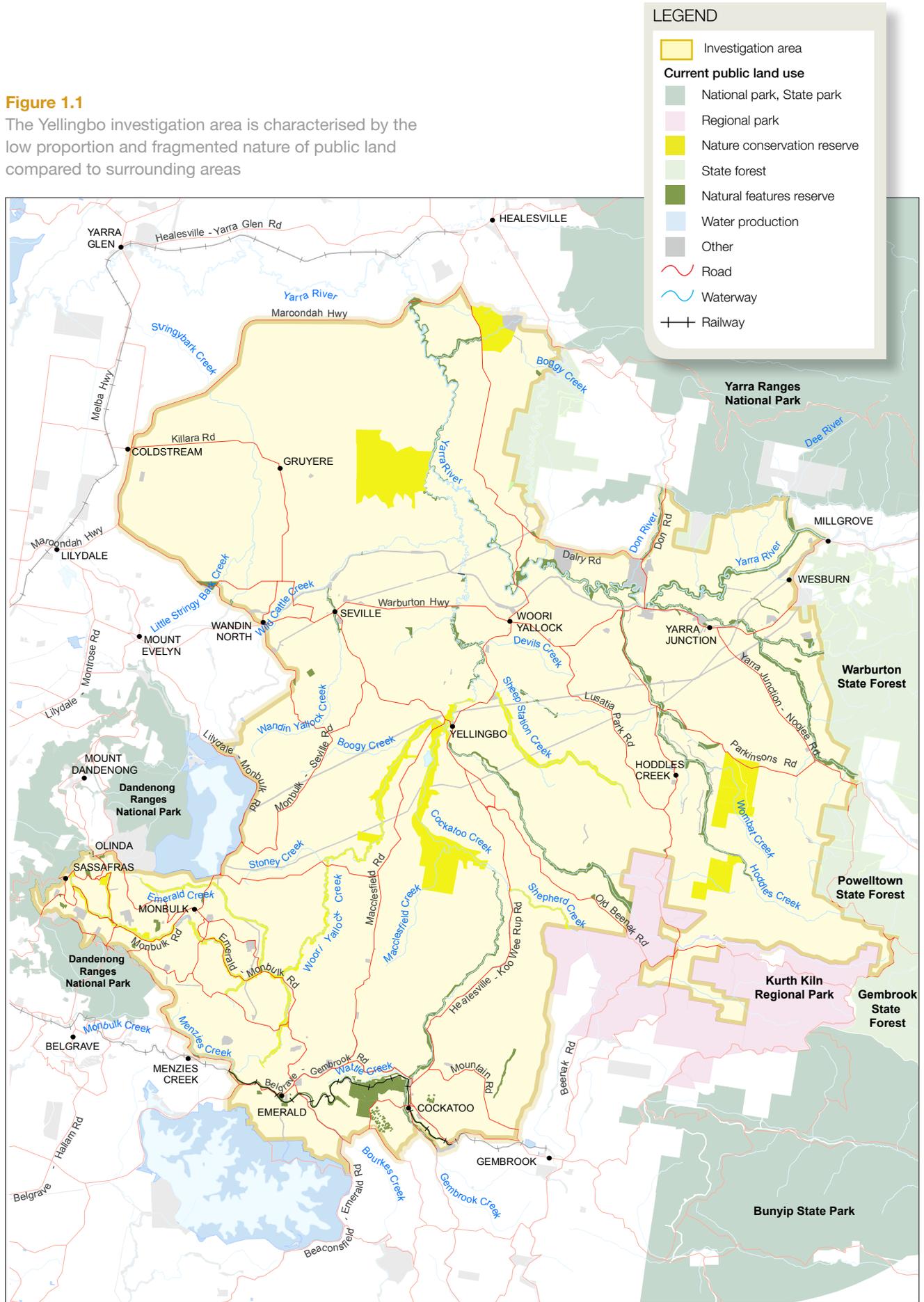
the natural values of the region on both public and private land. Community groups have been leaders in natural resource management practices, initiating or sponsoring research projects such as the Woori Yallock Creek Sub-catchment Biodiversity Local Area Plan⁵ and detailed vegetation mapping Hoddles Creek Education Area.^{6,7} These and other community projects have identified important biodiversity values across the investigation area. Volunteer labour has also made substantial contributions to revegetation, weed and pest animal control, fencing and other targeted conservation actions across the spectrum of land uses and land tenures. Despite the long history of community conservation activities and stewardship of the natural environment, substantial ecological threats remain and there are significant challenges to maintain the dwindling habitat and wild populations of iconic threatened species in this area.

There is a multitude of agencies and organisations working across this landscape, and many short-term funding opportunities and land management programs. Progress has been made but some uncertainty remains about the best direction to take in future planning for conservation in this region. This investigation has the potential to provide a mechanism for the development of a clear long-term conservation goal focused on public land and to prioritise actions for optimal benefit.



Figure 1.1

The Yellingbo investigation area is characterised by the low proportion and fragmented nature of public land compared to surrounding areas



The *Victorian Environmental Assessment Council Act 2001* (VEAC Act) came into effect in 2001. This Act repealed the *Environment Conservation Council Act 1997* and established the Victorian Environmental Assessment Council (VEAC) to conduct investigations and make recommendations relating to the protection and ecologically sustainable management of the environment and natural resources of public land.

The current five members appointed to VEAC are Hon Phil Honeywood (Chairperson), Mr Ian Harris, Dr Charles Meredith, Mr Ian Munro PSM and Ms Angela Reidy. During the course of this investigation the terms of three VEAC members expired: Mr Duncan Malcolm AM (Chairperson), Mr Barry Clugston OAM and Dr Airlie Worrall. The current Councillors thank these past members for their significant contribution to this investigation. A brief biography of each of the current Council members can be found on VEAC's website at www.veac.vic.gov.au. The VEAC Act requires VEAC to consult with departments and public authorities, and requires departments and public authorities to give practicable assistance to the Council in carrying out investigations. However, VEAC papers and reports are prepared independently.

The Council conducts investigations in accordance with the VEAC Act. In particular, section 18 specifies that 'Council must have regard to the following considerations in carrying out an investigation and in making recommendations to the Minister—

- a the principles of ecologically sustainable development;
- b the need to conserve and protect biological diversity;
- c the need to conserve and protect any areas which have ecological, natural, landscape or cultural interest or significance, recreational value or geological or geomorphological significance;
- d the need to provide for the creation and preservation of a comprehensive, adequate and representative system of parks and reserves within Victoria;
- e the existence of any international treaty ratified by the Commonwealth of Australia which is relevant to the investigation;
- f any agreement at a national, interstate or local government level into which the Government of Victoria has entered, or under which the Government of Victoria has undertaken any obligation in conjunction with the Commonwealth, a State, Territory or municipal council, which relates to the subject matter of the investigation;
- g the potential environmental, social and economic consequences of implementing the proposed recommendations;
- h any existing or proposed use of the environment or natural resources.¹

In August 2011, the Minister for Environment and Climate Change requested that VEAC undertake an investigation into public land in the vicinity of the Yellingbo Conservation Reserve. The terms of reference are presented below and specify three investigation purposes. VEAC is also required to take into account relevant government policies, strategies, programs and plans, as well as those matters described in the VEAC Act (see section 1.2).

TERMS OF REFERENCE

Pursuant to section 15 of the *Victorian Environmental Assessment Council Act 2001*, the Minister for Environment and Climate Change hereby requests the Council to carry out an investigation into public land in the vicinity of the Yellingbo Conservation Reserve¹.

The purpose of the Yellingbo investigation is to:

- (a) identify the biodiversity and ecological values in the specified area;
- (b) identify the current and likely future threats to these values and opportunities to reduce or remove these threats; and
- (c) make recommendations for appropriate management arrangements to conserve and enhance the biodiversity and ecological values.

In addition to the considerations in section 18 of the *Victorian Environmental Assessment Council Act 2001*, the Council must take into account the following matters:

- (i) relevant State Government policies and strategies, Ministerial statements and reports by the Victorian Auditor-General; and
- (ii) relevant regional programs, strategies and plans; and
- (iii) the option of consolidating land status.

A draft proposals paper and a final report are to be prepared, allowing two public submission periods. A separate discussion paper is not to be prepared.

The Council must report on the completed investigation by 31 July 2013*.

¹ For this investigation the area concerned includes multiple separate areas of public land located between (but excluding) Dandenong Ranges National Park, Yarra Ranges National Park, Warburton and Powelltown State Forest, Kurth Klin Regional Parks, Cardinia and Silvan Reservoirs and water production areas within the boundary specified on the attached map of the investigation area. The public land includes the following areas that are accepted government recommendations from the Land Conservation Council Melbourne Area District 2:

- (i) Warramate Hills, Yellingbo and Sassafras Creek Nature Conservation Reserves,
- (ii) natural features reserves including (streams and frontages, Streamside area and Bushland areas); and
- (iii) Hoddles Creek and Haining Farm Education Areas.

* The date for completion of the investigation was extended from 25 February to 31 July 2013.

1.4 Scope of the investigation

The Yellingbo investigation area is substantially smaller than for other recent investigations undertaken by VEAC (e.g. the River Red Gum Forests and Metropolitan Melbourne investigations). This small land base, combined with the low ratio of public land to private land and the short investigation duration, necessitates a tightly focused approach. However this does not imply a simplified approach or that the outcomes will be of limited relevance. The fragmented nature of the public land significantly adds to the complexity and difficulties in managing land for conservation, particularly land located on the fringe of Melbourne. Far from being unique in this aspect, the Yellingbo investigation area provides a microcosm of peri-urban characteristics and pressures. This investigation has the potential to demonstrate cost-effective conservation approaches for other fragmented landscapes, particularly in areas where the relatively straightforward and low cost options have been exhausted. The objectives and methods developed here will therefore be applicable to many similar fragmented landscapes across Victoria.

The terms of reference for the investigation emphasise biodiversity and ecological values. There is limited scope to explore other public land values across the investigation area such as recreation and economic uses, except where these relate to environmental considerations. Consequently, little background is provided in this draft proposals paper on these other public land use values.

The biodiversity and ecological values of the investigation area have been transformed markedly since settlement. The VEAC Act precludes recommendations over private land, but the values outside the public land estate are important in providing context, particularly when the large majority of land in the investigation area is private land and most of the remaining native vegetation within the investigation area is on private land. Many areas of high conservation value on private land are also managed in a sympathetic or complementary way to adjacent public land through, for example, Trust for Nature covenants, Land for Wildlife and Yarra4Life initiatives.

1.5 Matters to take into account

In addition to the considerations in section 18 of the VEAC Act (see section 1.2) the terms of reference require the Council to take the following matters into account: relevant State Government policies and strategies, Ministerial statements and reports by the Victorian Auditor-General; relevant regional programs, strategies and plans; and the option of consolidating land status.

Descriptions and discussion of land management for biodiversity conservation can be found in chapter 4. In reviewing the current public land use in the investigation area, Council has looked for opportunities to consolidate land status where practical and appropriate. Draft recommendations are in chapter 5.



• State emblems: the helmeted honeyeater (top) and pink heath (bottom)

The process for the Yellingbo Investigation is formally specified in both the VEAC Act and the terms of reference for the investigation. The process and timeline are shown in figure 1.2. The terms of reference specify that VEAC is to prepare a draft proposals paper and submit a final report. A separate discussion paper is not to be prepared. There are two public submission periods in total (each a minimum of 60 days), the second commencing with the publication of this draft proposals paper. Note that on the 25 July 2012 the Minister granted an extension for completion of the investigation from 25 February 2013 to 31 July 2013.

Under section 13 of the VEAC Act, a Community Reference Group (CRG) is required to be established for each of VEAC's investigations. See section 1.7 for more information about the CRG for the Yellingbo Investigation.

Figure 1.2
Investigation process and timeline



• Workshop with key stakeholders and government agency staff

Following the publication of the Notice of Investigation, VEAC sought input from community organisations, government agencies, landholders and interested individuals. A summary of matters raised in the consultation so far is contained in the following sections.

Written submissions

The written submissions process is one of the key methods by which VEAC seeks community views on an investigation. VEAC received 73 written submissions in response to the Notice of Investigation and the associated brochure which was posted or emailed to approximately 500 contacts for the investigation. The brochure included discussion points to assist submitters who were unsure of the sorts of issues on which to comment. Submissions were received from individuals, statewide and local conservation groups, government agencies, local government, recreational user groups, industry groups, landholders and fire agencies. These submissions contain valuable information and perspectives on the investigation, and have formed a major input to this draft proposals paper and the investigation as a whole. Submissions are an important resource and Council is very grateful for the effort that many people have gone to in preparing them. Submissions can be viewed at VEAC's website www.veac.vic.gov.au.

Community Reference Group

Section 13 of the VEAC Act requires a Community Reference Group to be established for each VEAC investigation. The group is made up of representatives of a broad range of interests related to the investigation, and provides advice and input to VEAC on many issues. Members are listed on the inside front cover of this report. Over the course of its four meetings to date, including one expanded key stakeholder and public land manager workshop, the group provided advice to VEAC on many aspects of the investigation and has made a particularly valuable contribution in advising on community views and public consultation.

Key stakeholder workshop

The second meeting of the Community Reference Group took the form of a workshop to which a broader range of stakeholders were invited. In total, 23 people (excluding VEAC attendees) from government public land management agencies and community groups attended this workshop in Woori Yallock. Participants were asked to comment on the key elements of the terms of reference: the biodiversity and ecological values, threats to these values, and appropriate future management arrangements to conserve and enhance the values. These discussions have contributed to developing the draft recommendations in this draft proposals paper.

Many of the values, threats and management options or recommendations presented at the workshop were also described in written submissions. There were many additional comments however, and clarifications and nuances were highlighted that were not generally apparent in submissions. For example, the community and social connection to public land was an important element for many participants at the workshop. Also raised was a strong desire for an overarching vision or statement of management intent that integrates landscape-level and local-level conservation actions and articulates the land management targets required, thereby bringing people together to achieve a common purpose.

Additional and follow-up discussions were held with various community groups and government agencies, including those responsible for natural resource and public land management.

Overview of issues raised in public consultation

Presented below is a summary of the views obtained from all the community consultations for each of the three purposes of the investigation.

Biodiversity and ecological values

Four main groups of values were identified:

- ✦ natural values such as ecosystem services, carbon storage, threatened species and threatened ecosystems, good quality native vegetation, protected areas, buffers around and connectivity between conservation reserves, and roadside vegetation
- ✦ waterways, wetlands, streams, water catchment and water supply or quality, protected waterways as biolinks
- ✦ human relationship to public land, connections between people sharing a common purpose and providing a sense of community. The social importance of Friends groups and Landcare groups was highlighted. For some people these activities are recreational and for many they provide an opportunity to meet people with similar or shared interests. Public land provides a vehicle for the expression of social connection and attachment to the environment
- ✦ productive uses of the landscape (agriculture and horticulture) and resource uses on public land (e.g. stock grazing, water extraction), with a focus on the interface between public and private land for the purpose of interconnectivity of habitat across the fragmented landscape; unlike many other regions, there is a relatively long history of land bequests, donations and purchase for addition to conservation reserves, and a long history of and continuing growth in off-reserve conservation such as Landcare, Land for Wildlife and conservation covenants in the investigation area.

While it was understood not to fall within biodiversity and ecological values, several people also recognised recreation and tourism opportunities, visual amenity and landscape aesthetics, and public safety (in particular for horse riding along roadsides) as important values to protect.

Another observation was that public land can be a means of unifying a broad range of competing and sometimes conflicting views about or uses of public land. In general, public land use changes are relatively slow compared to the rapid landscape change on private land in peri-urban or growth areas, and can provide a landscape reference point and a demonstration site or education resource for a changing local demographic and for visitors from the nearby urban centre of Melbourne.

Threats to these values

The main threats identified were:

- ✦ devastating or widespread wildfire, and ecologically inappropriate fire regimes
- ✦ altered hydrology, changes to run-off from private land, increased storm water with growing urban infrastructure, and pollution of waterways
- ✦ increasing invasion by pest plants and animals, and in particular significant increases in the species such as fox and deer that are most likely to have direct negative effects on the iconic fauna species in this area
- ✦ climate change
- ✦ for public land management specifically, poor resourcing given the threat status of species in the area, fragmented and sometimes inconsistent management practices, and absence of a clear vision and message about public land management with quantified targets
- ✦ specific to Yellingbo Nature Conservation Reserve, a perceived lack of capacity to manage the wider floodplain effectively, and a need for clarity around site-specific management practices and their balance with landscape-scale management; some people identified an absence of specific land management knowledge (both land managers and the community) as a major threat to the natural values or the region
- ✦ disintegration or disillusionment of community groups, a need to maintain momentum and direction (particularly after VEAC's investigation is completed); there was a strong emphasis on the social importance of public land and the management of water and hydrology in the Woori Yallock workshop
- ✦ potential changes to current levels of protection (e.g. reducing protection through planning provisions), unauthorised use of Crown land, lack of appreciation of public land values by government and the community
- ✦ possible loss of current and potential recreational opportunities, especially for horse riding, due to changes in public land use designations, increased danger from traffic adjoining favoured roadsides, or management arrangements or objectives
- ✦ continued habitat fragmentation and increased edge effects that are difficult to manage on the private-public land interface; poor nutrient management in waterways, and illegal vegetation clearing or habitat degradation are continuing threats
- ✦ incremental impacts from infrastructure development (road widening and slashing of roadside vegetation), increased use of public land, more intensive agriculture and utilisation of adjoining private land; the inappropriate use of public land that is critical for biodiversity conservation is a threat identified by some people

- ✦ the restricted distribution of some species and barriers to natural gene flow through breaks in biolinks leading to a high risk of extinction.

The community was concerned about the ongoing management, use and appreciation of public land. There is a perception that increased awareness of threats and an increased appreciation of values is required to deliver greater protection of natural values. This includes the desire for a greater level of community awareness of the range of incentives and grant schemes for improved land management. On the other hand, there is a high level of community recognition of the icon threatened species in the investigation area.

Appropriate management arrangements

Community views largely focused on provision of adequate resourcing for land managers, coordination between management agencies, collaborations or partnerships with the wider community, and development of a clearly defined land management purpose. The following is a summary of the proposals raised in community consultation.

- ✦ create biolinks, expand conservation reserves, establish buffers (including on private land) around areas with high conservation values
- ✦ increase incentives and information for private land owners to manage their adjoining land sympathetically with public conservation land
- ✦ establish a single park with a single land manager and one management authority to streamline management and communication with the community, and to better use existing resources and attract new resources
- ✦ utilise science-based land management approaches with clearly defined goals (e.g. controlled burning)
- ✦ improve access to Yellingbo Nature Conservation Reserve for fire management and recreational use
- ✦ articulate an overarching vision or management plan for all public land but particularly for the conservation areas
- ✦ establish collaborative and coordinated public land management, recognising the importance of other land managers to provide resources or funding; create a forum for collaboration between public land managers (e.g. a liaison committee)
- ✦ secure a long-term funding base and increase resources for management to retain long-term staff, and conduct more enforcement and monitoring
- ✦ increase conservation status through appropriate reservation of specific areas and public land more generally
- ✦ classify Crown parcels into land management units and appoint suitable manager to manage each category; identify the threats to each unit and establish an action plan and budget to address the threat.

Some of these management arrangements or comments were disputed by others. For example, the assertion that Yellingbo Nature Conservation Reserve is a fire hazard because there are not enough management tracks was made by some people, and contested by others.

There was some debate as to whether the important swamp habitat could be restored in Yellingbo Nature Conservation Reserve in order to accommodate a growing population of captive-bred helmeted honeyeaters and Leadbeater's possums.

A common proposal was for all public land with conservation values to be consolidated into one park managed by one body or agency. There was some underlying concern around existence or enforcement of regulations in this high conservation value landscape and that clarification or resolution was difficult.

There was a strong sense that a vision or clear communication of management priority or purpose and intent is required. Clarity, consistency and management targets that are significant, realistic and time-sensitive are considered to be necessary. It was thought that the main goals need to be defined and the community engaged in understanding the practicalities of achieving these goals.

Of those management issues described above the following issues were the most contested or had the most divergent range of community views:

- ✦ fire hazard management requirements in Yellingbo Nature Conservation Reserve
- ✦ recreational access to Yellingbo Nature Conservation Reserve
- ✦ current resourcing or management arrangements for public land
- ✦ the ability of public land managers to restore the habitat of the icon threatened species in Yellingbo Nature Conservation Reserve and nearby areas
- ✦ potential changes in planning provisions, conservation on private land, and effects of the current public land management on the values of the adjoining private land.

2 Biophysical setting and human history



2.1 Physical environment

Geology and geomorphology

The oldest rocks in the investigation area date from more than 400 million years ago (Ma) when the area was under the ocean, and first formed as sediments accumulating on the ocean floor. After many millions of years of deposition, the sedimentary rocks were uplifted out of the sea as a result of tectonic movement and formed a terrain of folded and faulted rocks that extend over much of southeastern Australia. Geologically this area is known as the Tasman Fold Belt system (figure 2.1).⁸

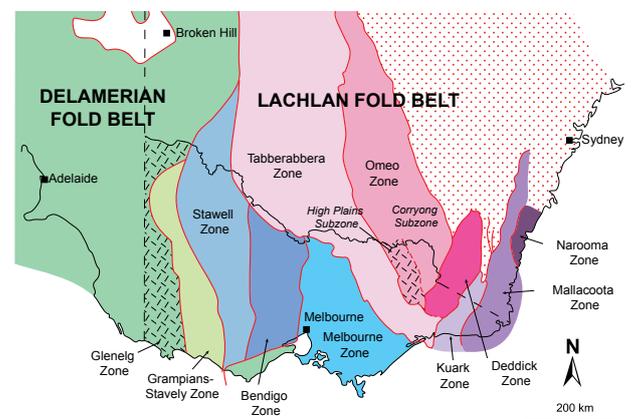
Also around this time of folding and faulting, igneous rocks of late Devonian age (380-350 Ma) intruded (granites) and erupted on the surface (rhyolites) of these older sedimentary rocks. These granites and rhyolites are generally more resistant to surface erosion than the surrounding sedimentary rocks. As a result, Devonian igneous rocks form the prominent mountains of the Yarra and Dandenong Ranges surrounding the Upper Yarra catchment as well as other elevated areas of the Great Dividing Range such as Mount Buffalo and Baw Baw Plateau.

The next youngest rocks preserved in the region are the Palaeogene Older Volcanics basalts erupted around 50 million years ago. These rocks have been broken down to form some of the richest soils in Victoria, now extensively developed for agriculture and horticulture on the eastern slopes of the Dandenong Ranges and through to Gembrook.

Around the time of the basalt eruptions the Woori Yallock Creek and its tributaries flowing from the ranges surrounding the investigation area formed a small contained sub-catchment or drainage basin within the larger Upper Yarra catchment. Here the streams generally flow in a northerly direction from the Dandenong Ranges and are captured by the Yarra River as it flows west from the Yarra Ranges towards the lower Yarra Valley.

Figure 2.1

Geologists have divided the Tasman Fold Belt system of southeastern Australia into zones – the Yellingbo investigation area comprises a small part of the Melbourne Zone⁸



Quaternary (2.5 Ma to present) unconsolidated non-marine sedimentary rocks comprising sands, silts and gravels occur within the river valleys and floodplain. The catchment and river system is described later in this section.

Based on scientific values assessed by the Geological Society of Australia (Victoria) heritage subcommittee, six sites of local geological significance have been identified on public land in the investigation area.^{9, 10, 11} Each of these sites provides a good example of a geological or geomorphological feature represented at several locations across the region. These sites are a roadside cutting, and several river geomorphological features such as meanders or channel features, bends or terraces, also represented in other locations across the Yarra River catchment.

Geologically significant sites occur nearby in the granitic landscapes of Bunyip State Park and Kurth Kiln Regional Park (e.g. Seven Acre Rock, Four Brothers Rock, Black Sands Range, Bunyip Gap).

Broad landscapes

The geomorphology of the investigation area has produced a complex pattern that can be simplified into four distinctive landscapes:

- ✦ **The Dandenongs.** The upper reaches of the Woori Yallock catchment, upstream from about the Menzies Creek confluence, are essentially part of the Dandenong Ranges, characterised by steep slopes and deep gullies, high rainfall, tree ferns and mountain ash, and intensive agriculture including floriculture and nurseries.
- ✦ **Hoddles Creek area.** East of about Woori Yallock the landscape is distinctive for its steep slopes and deep gullies, relatively large blocks of remnant native foothill forests (on both public and private land), and vineyards and beef cattle.
- ✦ **North of Warburton Highway.** Here the landscape has generally gentle topography with very little native vegetation, and extensive vineyards, beef grazing and apple and pear orchards.
- ✦ **Yellingbo-Macclesfield area.** The remainder of the investigation area is characterised by gentle to steep slopes with native vegetation mostly scattered across it in small patches and individual trees, and beef cattle and horses. The rich volcanic soils on the eastern slopes of the Dandenongs near Silvan support particularly rich agricultural production, notably berries and cherries.

While these divisions are somewhat arbitrary, they form a useful framework for understanding the diversity and complexity of landscapes in the investigation area.

Climate

Weather or meteorological observations have been collected and analysed in Australia since the middle of the 19th century. The long term trends and averages are known as climate. Australia has always shown high levels of climatic variability.

A summary of the climate conditions across the Yarra Valley region encompassing the Yellingbo investigation area is presented below. In general terms the area experiences temperate conditions as defined in the Koeppen classification scheme, with distinctly dry and warm summers.

Rainfall

Table 2.1 shows information from meteorological stations where data have been collected over a long period of time, and the station is located in or near the investigation area. Mean annual rainfall at Silvan is 1216 mm with a range of 903 to 1544 mm. Similar values are recorded at Maroondah Weir with annual rainfall totals generally increasing to the east and with elevation (e.g. Warburton and O'Shannassy reservoir). The average annual rainfall for the Melbourne city gauge is significantly lower than the investigation area at around 640 mm¹² underlining the importance of this region for Melbourne's water supply.

Historically, rainfall across the region is highly variable, both between months and years, and between different locations. Generally, rainfall in southeast Australia is greatest in winter and spring. However, during recent decades, there has been a quantifiable trend in southeast Australia towards decreased late autumn and winter rainfall.

Table 2.1

Rainfall and temperature in and around the Yellingbo investigation area

Source: Climate Data Online, Bureau of Meteorology <http://www.bom.gov.au/climate/data>^{12, 13}

Station (period of operation)	Mean annual rainfall (mm) (lowest - highest)	Station (elevation)	Mean annual max daily temp (degrees C)	Mean annual min daily temp (degrees C)
Silvan (1920 - current)	1216 (903-1544)	Coldstream* (83 m)	20.2	7.3
Maroondah Weir (1892 - current)	1092 (784-1363)	Healesville* (131 m)	19.2	8.0
Woori Yallock (1901-1986)	927 (676-1215)	Powelltown (189 m)	18.6	7.6
Warburton (1878-2008)	1313 (923-1691)	Mt Dandenong* (600 m)	15.2	7.8
O'Shannassy Reservoir (1915 - current)	1396 (997-1775)	Melbourne (31 m)	20.0	11.0

*Standard reference period (1961-1990) data are not available or incomplete.

Temperature

Across the investigation area average temperature conditions vary predominantly with elevation (see table 2.1). In general the climate is considered temperate with average annual daily maximum temperatures between 15-21°C and average minimum daily temperatures of 9-6°C. The highest maximum daily temperature recorded at Mount Dandenong is 36.2°C and the lowest minimum daily is -2.3°C, while nearby at Coldstream 44.8°C is the highest maximum daily temperature and the lowest minimum daily temperature is -5.8°C.¹³

Climate change

The world's 13 warmest years have all occurred in the 15 years since 1997. The average worldwide surface temperature has increased by about 0.8°C, and Australia's by about 0.9°C, during the past century. During the last La Niña year, and most La Niña years, increased rainfall and cloud cover led to cooler than average daytime conditions (see figure 2.2).^{14, 15}

However, Australian annual average overnight minimum temperatures have continued to warm by more than 0.8°C since 1960. Despite the La Niña effect on daytime temperatures, the average minimum temperature in 2011 was the third highest in 102 years of records.¹⁶

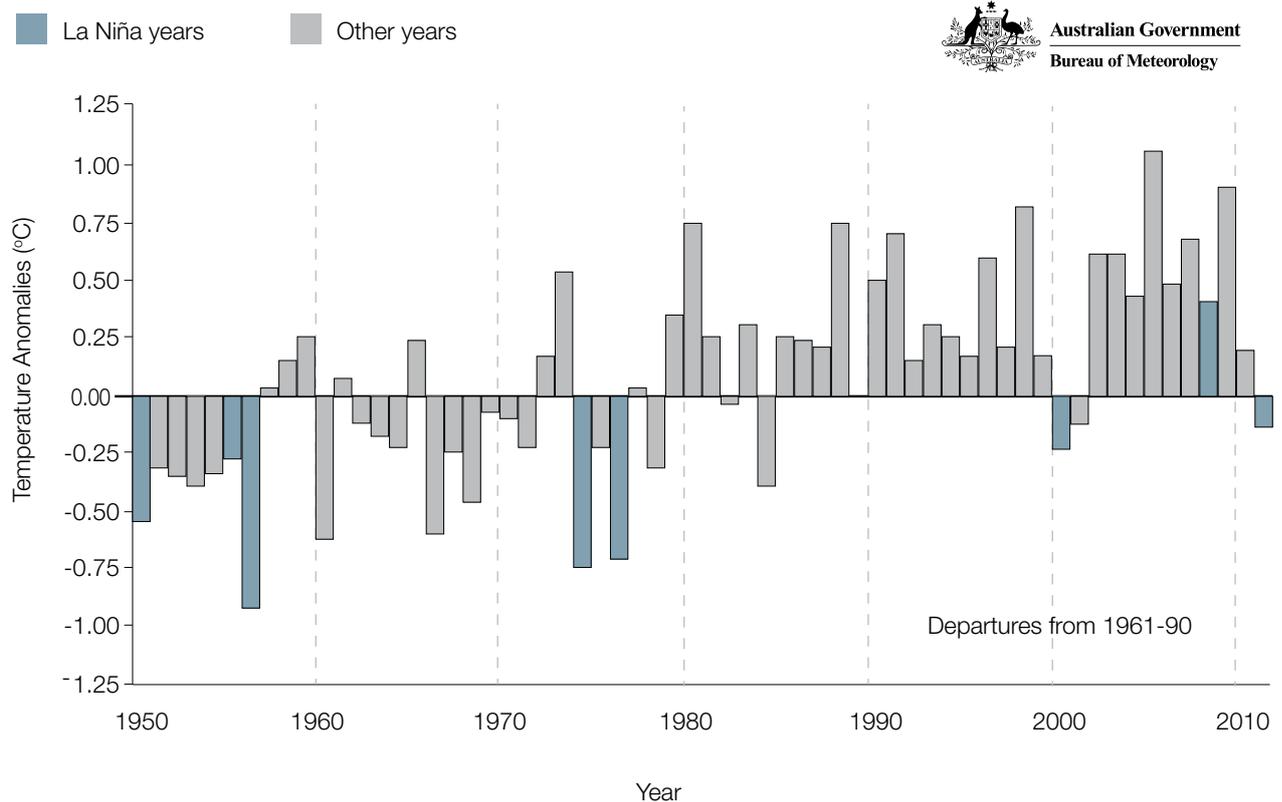
The last La Niña year (2011) saw the highest average annual rainfall total ever recorded across Australia; however the autumn-winter drying trend remains apparent.¹⁵ In 2011, Victoria recorded its wettest January in 112 years of records, with many parts of the state recording the highest ever January rainfall total, and it was the highest annual Melbourne total since 1993.¹⁶

The future climate of the Port Phillip and Westernport region is expected to be hotter and drier than it is today.¹⁷ The greatest increases in average annual temperatures are expected in summer, with the annual average number of days over 35°C and 40°C also expected to increase. The greatest percentage reductions in average annual rainfall are expected in spring. There are expected to be fewer rainy days but increasing rainfall intensity in most seasons. Average annual runoff in the Yarra River is expected to decrease by as much as 20 per cent by 2030.

On a regional level, climatic condition for the municipality of the Yarra Ranges and the investigation area are cooler average temperatures and greater rainfall than areas west of Melbourne. Predicted climate change similarly varies across the entire metropolitan region with impacts reducing from west of Melbourne towards Warburton.¹⁷

Figure 2.2

Annual mean temperature anomalies for Australia (compared with 1961-1990 average), with La Niña years marked in blue (nine La Niña years in total, including 1989)¹⁴



Fire hazard

Victoria is a fire-prone landscape. Fire management requires both an understanding of the role fire plays in biodiversity maintenance, and the threat to life and property. Fire management on public land is discussed in chapter 3 and the relationship between fire management and biodiversity are described in chapter 4.

Virtually all natural bushfires are caused by lightning strikes, typically occurring when thunderstorms roll across in summer 'cool changes'. All other bushfires on public land are a direct result of human activity including both intentional and accidental ignitions. In an average year, people cause up to two thirds of wildfires on public land, either deliberately or accidentally.¹⁸ Deliberate lighting is the second highest cause of all bushfires on public land after lightning. Climate change is likely to increase the risk of severe or extreme weather events, such as heat waves and drought, typically associated with high fire danger.^{17,19} Additionally, the number of suitable days on which to conduct planned burning may be reduced. In Melbourne, the number of 'extreme' fire danger days is expected to increase by between 12 per cent and 38 per cent by 2020, and by between 20 per cent and 135 per cent by 2050.¹⁷

Catchment, river systems and waterways

The Yarra River rises in the Eastern Highlands and, after descending through a narrow valley and gorge at Warburton, travels west across a broad valley and on through the city of Melbourne. Although small by world standards this river flows for 242 kilometres from its source in the Yarra Ranges National Park to the head of Port Phillip Bay. The Yarra River has been designated a heritage river between Warburton and Warrandyte. It traverses the investigation area from Millgrove to near Healesville, initially flowing west before, just downstream of Woori Yallock, flowing north for about 11 kilometres and skirting the eastern flank of the Warramate Hills. Along this reach its path is controlled largely by the underlying rock structure to which it broadly runs parallel. In the investigation area and downstream to Yarra Glen, the river has formed a wide floodplain characterised by broad bends and large meanders as it flows through beef and dairy farms, and an increasing number of vineyards on the foothills comprising the Yarra Valley wine region.

The Yarra River Catchment covers about 4078 square kilometres and includes major tributaries such as those in the investigation area: Woori Yallock, Emerald, Sassafra, McCrae, Shepherd, Cockatoo and Hoddles creeks and Little Yarra River).²⁰ The Upper Yarra Reservoir (capacity 200,579 ML) is one of a number of dams in the Yarra Catchment that supply Melbourne's water. Constructed in 1957 it has reduced the Yarra's flow by around 50 per cent and virtually eliminated the frequent and

severe floods historically experienced in the lower reaches. It is a very productive catchment generating the fourth highest water per hectare yield of any catchment in Victoria.²⁰ Water from Upper Yarra Reservoir is transferred to Silvan Reservoir (capacity 40,445 ML) and Cardinia Reservoir (capacity 286,911 ML) for distribution to Melbourne).²¹

A small area of Cardinia Creek catchment occurs near Emerald along the southern margin of the investigation area. This marks a drainage divide where streams flow to the south towards Cardinia Reservoir, then through the former swamplands on the northern margin of Western Port before ultimately emptying into that bay.

Urbanisation, land clearing and water extraction for urban and agricultural uses have modified flow regimes in most waterways in the investigation area. As a result, many creeks and rivers are considered to be flow stressed.

Catchment management

Unlike other catchment management authorities in Victoria, the Port Phillip and Westernport Catchment Management Authority (PPWCMA) shares catchment management responsibilities with the local water authority. Melbourne Water is responsible for management of waterways and public land water frontages, drainage and floodplains, environmental water reserves and water quality monitoring. The PPWCMA sets the framework for managing natural resources and builds cooperation, coordination and partnerships between a broad range of stakeholders.

A number of programs and projects designed to improve waterways operate across this region. Many of these such as Melbourne Water's *Stream Frontage Management Program* and *Corridors of Green*, and PPWCMA *Yarra4Life* are described in chapter 4. By way of example, in 2006 the Yarra River Action Plan programs invested \$600 million in initiatives designed to improve the long term health of the river.²² Much of this funding was focused on improving stormwater quality and reducing the level of sewage entering the Yarra River.

In May 2012 Melbourne Water released a draft *Healthy Waterways Strategy*²³ which will replace the current *Regional River Health Strategy* in 2013. It will guide investment and actions for healthy rivers, estuaries and wetlands from July 2013 to June 2018. Activities under this strategy include vegetation management, environmental flows, habitat enhancement and working with communities to achieve healthy waterways.

Bioregions and broad native vegetation patterns

Similar assemblages of plants and animals tend to co-occur in similar environments, a pattern with important implications for conservation planning. Accordingly, Australia and Victoria has been divided into broadly similar biogeographic regions based on physical characteristics such as the climate, soils, geomorphology and biological patterns such as vegetation types. In Victoria, 28 bioregions have been delineated and mapped. These form fundamental conservation planning units within which the extent of remaining vegetation and occurrence of plants and animal species can be measured and quantified for the purpose of establishing conservation status, depletion levels or rarity.

The Yellingbo investigation area falls entirely within the extensive Highlands-Southern Fall bioregion (see figure 2.3). As the name suggests, this bioregion is located on the southern slopes of the Great Dividing Range, and comprises more than 1.1 million hectares. Vegetation in this bioregion includes dry-shrubby and damp forest types on the upper moderate to steep slopes and high plateaus. Wet forest types, including the most extensive Cool Temperate Rainforest in Victoria, occur in some protected valleys and gullies. Montane forest ecosystems occur at higher altitudes east of the investigation area. At the base of the valleys, alluvial plains and flats host vegetation communities with a riparian character.

Around 24,600 hectares of native vegetation remain in the investigation area which is approximately 48 per cent of the original extent of remnant native vegetation. Of these vegetated areas, approximately 3100 hectares (12 per cent) is located on public land; about 52 per cent of all public land is vegetated. The remaining 88 per cent of native vegetation is on private land. The current extent of native vegetation in the investigation is apparent in maps B and C (back pocket).

In order to understand the complexity of vegetation and ecological communities, a framework of vegetation units of similar character has been established. Known in Victoria as Ecological Vegetation Classes (EVCs), there are approximately 300 EVCs statewide, and 21 within the Yellingbo investigation area. The bioregional conservation status, i.e. the conservation status of each EVC in each bioregion, is used to assist natural resource management and conservation planning at the landscape and regional scale.

Vegetation communities

The 24,600 hectares of remnant vegetation mostly comprises dry and lowland forests, and wet or damp forest types at higher elevation and riparian or swampy scrubs and woodlands along drainage lines. On the valley floor and floodplains, heathlands and riparian scrub or heathy woodlands dominate, but are significantly depleted by clearing compared to pre-European levels. Appendix 3 lists the 21 EVCs identified on public and/or private land in the investigation area; however four of these occur almost entirely on private land (Plains Grassy Woodland, Heathy Dry Forest, Valley Heathy Forest, and Creekline Herb-rich Woodland). Another two are of limited extent with around 10 hectares each on public land and significantly greater current extent on private land (Valley Grassy Forest and Grassy Forest). The current distribution of EVCs in the investigation area is shown on map B (back pocket).

The 3100 hectares of remnant native vegetation on public land in the investigation area largely comprise 16 EVCs, 11 of which are threatened and another two are classified as depleted. Three endangered EVCs occur on public land in the investigation area: Cool Temperate Rainforest, Floodplain Riparian Woodland and Swampy Riparian Complex. Each of these threatened EVCs is listed on the *Victorian Flora and Fauna Guarantee Act 1988* and is briefly described below. Note that because the area of a fourth endangered EVC, Plains Grassy Woodland, is less than a tenth of a hectare it is not mentioned further here.

Cool Temperate Rainforest vegetation community is dominated by combinations of myrtle beech, southern sassafras, black olive-berry and blackwood. The understorey is dominated by musk daisy-bush, austral mulberry and tree-ferns, with a ground layer dominated by ferns. Recent detailed mapping has revealed the presence of Cool Temperate Rainforest in Hoddles Creek Education Area.^{6,7} The vegetation mapping used for analysis here is from 2005. Updated vegetation mapping is soon to be released by DSE, but may not include the fine-scale detail of rainforest areas at Hoddles Creek Education Area. Currently mapping shows Cool Temperate Rainforest restricted to the Sassafras Creek headwaters and mostly contained in an area of approximately 18 hectares in the existing Sassafras Creek Nature Conservation Reserve.

Floodplain Riparian Woodland, a low elevation open woodland dominated by river red gum, has a medium to tall shrub layer with a ground layer consisting mainly of

grasses, herbs and sedges. Occurring along floodplains of large meandering rivers, often in conjunction with one or more wetland communities, in the Yellingbo investigation area this EVC is of restricted extent and principally located along riparian strips fronting Woori Yallock Creek (15 hectares) and the Yarra River (15 hectares). Located on relatively low lying areas, the soil is a deep, fertile clay subject to periodic major flooding.

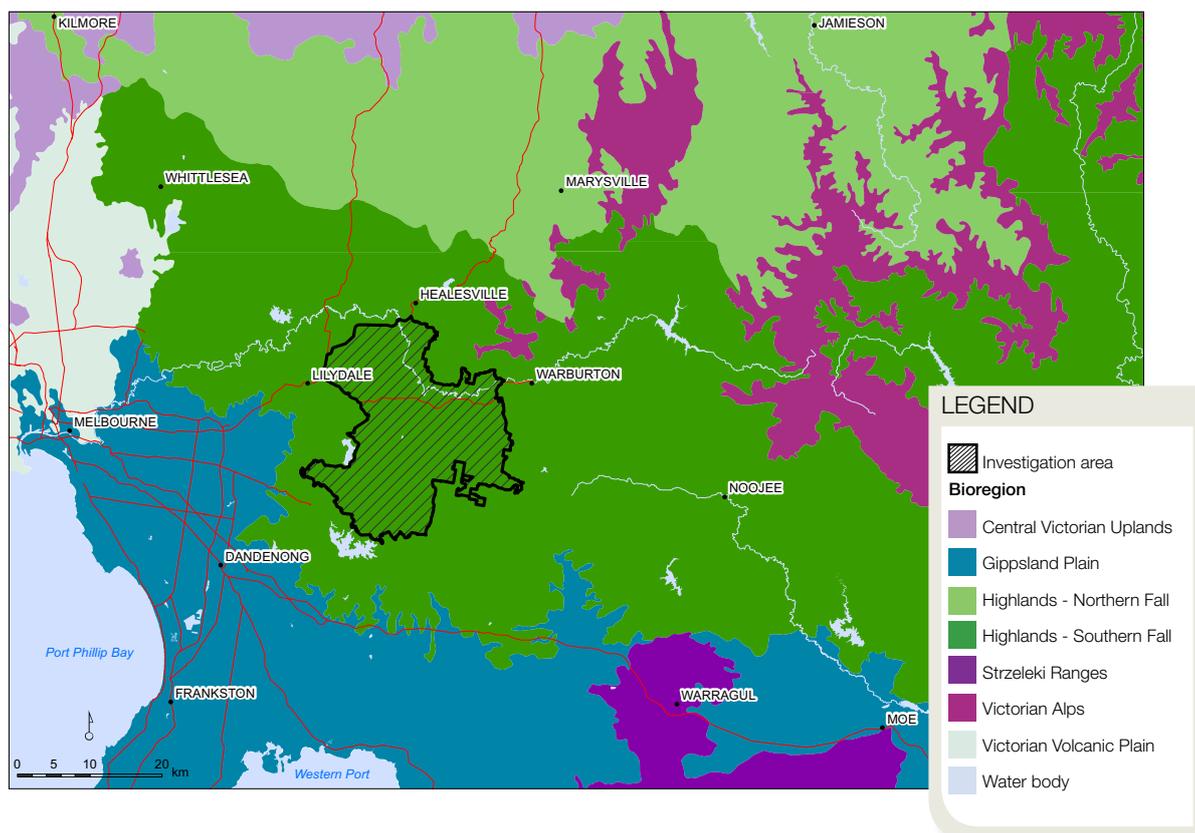
Endangered Swampy Riparian Complex as the name suggests is a structurally variable vegetation complex of swampy to waterlogged areas along low gradient drainage lines. Component EVCs of this mapping unit can include Creekline Herb-rich Woodland, and Swampy Riparian Woodland which may be mapped individually where distinctive or as part of the broader EVC complex. Of the 250 hectares of endangered Swampy Riparian Complex EVC on public land in the Yellingbo investigation area around 170 hectares are within either Yellingbo or Coranderrk nature conservation reserves. More than 1100 hectares of this vegetation type remain on private land in the investigation area.

Riparian vegetation in Yellingbo Nature Conservation Reserve supports the extremely rare and threatened Sedge-rich *Eucalyptus camphora* Swamp Community. This threatened vegetation community comprises an overstorey of mountain swamp gum with structural variation from open forest to woodland. The understorey consists of sparse woolly tea-tree except along permanent stream beds where it can form a closed shrub layer. Scented paperbark can also occur with woolly tea-tree in ephemeral waterways. The ground layer consists of a range of sedges, rushes, grasses and forbs.²⁴ This vegetation community provides critical habitat for the two iconic nationally endangered animals: helmeted honeyeater and Leadbeater's possum at Cockatoo Swamp, although these species were formerly more widespread. It has been estimated that around 90 per cent of the swamp habitat is currently in poor condition with dieback spreading upstream along Cockatoo Creek.

Of the remaining threatened EVCs, four listed as vulnerable are of limited extent on public land and a relatively large remnant area remains on private land: Riparian Scrub/Swampy Riparian Woodland Complex, Valley Grassy Forest, Valley Heathy Forest, and Grassy Forest. Vulnerable Riparian Thicket consists of around 315 hectares across the investigation area with the largest remaining areas on private land. The last two vulnerable EVCs, Creekline Herb-rich Woodland and Swampy Riparian Woodland, are of relatively limited extent across not only public land, but the investigation area more generally, occupying 63 and 207 hectares in total respectively.

Figure 2.3

Location of the Yellingbo investigation area in the western part of the Highlands-Southern Fall bioregion



Plant and animal species

Fauna

The Yellingbo investigation area is well known for containing the last remaining wild population of the nationally endangered helmeted honeyeater which was named as Victoria's bird emblem in 1971. This subspecies of the more widely distributed yellow-tufted honeyeater is restricted to Victoria. It has been the subject of a conservation program extending for more than half a century and focused within the investigation area near the township of Yellingbo. The helmeted honeyeater is listed on the Victorian *Flora and Fauna Guarantee Act 1988* and national *Environment Protection and Biodiversity Conservation Act 1999*, and is described in more detail in box 2.1.

The investigation area also supports the only lowland population of the nationally endangered Leadbeater's possum which is also a Victorian faunal emblem endemic to the state and listed on both the Victorian and national threatened species Acts. It is estimated that fewer than 1000 individuals exist in the wild, the population having been significantly reduced by the extensive Black Saturday 2009 bushfires that destroyed large areas of the main highlands montane ash forest habitat. Research has found genetic differences between the lowland and montane populations and the small outlying population at Yellingbo is managed as an 'evolutionarily significant unit'. In addition, the Yellingbo population occupies the same swamp as the helmeted honeyeater—a very different habitat to the tall wet eucalypt forests of the montane populations. This shared habitat and historical records near Woodleigh on the Bass Coast and south of Tynong near the edge of the Koo Wee Rup Swamp suggest that the lowland population may have a similar history to that described for the helmeted honeyeater in box 2.1. The Yellingbo population was discovered in 1985 and now is believed to consist of around 60 individuals. The work done for nature conservation at and around Yellingbo Nature Conservation Reserve is a significant part of the setting for the Yellingbo investigation, and is described in more detail in chapter 4.

The investigation area supports many other threatened fauna species, such as swamp skink, powerful owl, spotless crane, growling grass frog. A full list of threatened fauna recorded in the investigation area is provided in appendix 2.

Flora

A list of flora, including threatened species, in the investigation area is also provided in appendix 2. The list includes several threatened orchid species such as the wine-lipped spider-orchid, mountain bird-orchid and spurred helmet-orchid, as well as shrubs and herbs such as wiry bossiaea, slender bitter-cress and swamp everlasting.

Perhaps the most notable threatened plant species in the investigation area is the Emerald or white star-bush. This upright shrub is endemic to Victoria, being largely restricted to the investigation area, and listed on the *Flora and Fauna Guarantee Act 1988*. It grows to around 1-2 metres on well drained soils with open foothill forests. Several populations are found on public land in the Monbulk-Cockatoo area, notably at Wright Forest Bushland Reserve and Garden Estate Bushland Reserve.

Also of note is the vulnerable slender tree-fern—a tall (10-20 m) fern with a fibrous trunk of 8-10 cm diameter. It is uncommon in the region but may be found in moist shaded gullies, particularly near Sassafras Creek.



Helmeted honeyeater

Helmeted honeyeater *Lichenostomus melanops cassidix* is a songbird with striking black, yellow and olive plumage. It is the largest of the four subspecies of the yellow-tufted honeyeater and similar to the race *L. m. gippslandicus*, except the forehead tuft of feathers is more conspicuous and the transition between the yellow crown and nape, and the dark olive back is much more abrupt. Helmeted honeyeaters were formerly found in many locations in the upper Yarra River and Western Port catchments. It is now known in the wild at only one location—the Yellingbo Nature Conservation Reserve. A re-introduced population has been established at Bunyip State Park and, fortunately, was not burnt out in the bushfires that affected the region in February 2009. At least two known wild colonies were wiped out in the 1983 Ash Wednesday bushfires.

The decline of the helmeted honeyeater follows a classic endangered species pattern. It seems to have evolved as a specialised inhabitant of swampy riparian thickets at the southwestern end of the yellow-tufted honeyeater's distribution; other subspecies occupy a broader range of drier and more open forests over much of southeastern Australia. The helmeted honeyeater's particular habitat probably occurred patchily but not particularly uncommonly in the upper Yarra River and Western Port catchments, where the combination of relatively high and dependable rainfall and patches of low-lying flat topography resulted in poor drainage producing riparian swamps and swampy forests with varying numbers of eucalypts such as manna gum and mountain swamp gum. Its distribution and habitat were limited at the continental scale but, at the local level, much more extensive than today.

With diversion of water away from these swampy areas, their fertile soils and flat topography became highly favoured for agriculture and most of the decline of the helmeted honeyeater probably occurred as, and for some time after, most of its habitat was cleared between about 1870 and 1960. By the time its plight

became more widely known in the 1960s it was limited to a relatively small number of colonies in remnant habitat patches. Over the intervening decades these highly vulnerable small colonies have disappeared one-by-one to the point that wild birds now only occur in one habitat type at one location—Sedge-rich *Eucalyptus camphora* Swamp in a small section of the Yellingbo Nature Conservation Reserve. Currently there are around 70 birds here, and about 15 mostly captive-bred birds that have been released in an attempt to establish a new colony at Bunyip State Park.

In 1988 the Helmeted Honeyeater Recovery Team was first convened by the predecessor of the Department of Sustainability and Environment and the first national recovery plan was completed in 1991. This recovery plan is one of the longest-running and most intensive implemented in Australia. Over \$300,000 has been spent each year on managing the wild population, the captive breeding program and the bird's habitat. The long-term conservation objective is to establish a stable wild population of at least 1000 individuals in at least 10 separate but interconnected colonies in the region. An enormous volunteer contribution has also been dedicated to preservation of this bird over more than 50 years. The Friends of the Helmeted Honeyeater, for example, run an indigenous nursery to provide plants for revegetation and habitat improvement, and the total volunteer contribution has been estimated to be worth at least \$80,000 per year.



Aboriginal land use and history

This region is part of the traditional lands of Aboriginal people of the Wurundjeri tribe and includes a number of language groups or clans of the Woi wurrung. There are many places and sites across the investigation area of cultural heritage significance to Aboriginal people. The Yarra River and other waterways, swamps and lakes are of particular importance to Aboriginal people and contain archaeological sites but 'there is no area which appears not to have been used by the Aborigines in the region'.^{25, 26} Documented pre-contact archaeological sites occur throughout the Yarra Valley including scarred trees and artefact scatters. Some particularly good examples of scarred trees are located in Coranderrk Nature Conservation Reserve. Several well known Aboriginal community leaders are associated with the historic Coranderrk Aboriginal Mission Station established near Healesville. A short history of this place is summarised below but, for more information readers are encouraged to visit the *Mission Voices* website developed by Koorie Heritage Trust Inc and State Library of Victoria in association with ABC Online (www.abc.net.au/missionvoices/default.htm).²⁷

In March 1863 Coranderrk Aboriginal Mission Station was established as a 'protectorate' reserve for dispossessed Aboriginal people. This traditional camping site between the Watts River and Badger Creek near Healesville was selected by Aboriginal people who abandoned a failing reserve at Acheron. Tired of waiting for an alternative more suitable site to be selected, they proposed the new site to John Green who was an Inspector for the Central Board for the Protection of Aborigines. Soon after, the government reserved around 2300 acres for Coranderrk Aboriginal Reserve. In 1865 the population of Coranderrk was 105 people making it Victoria's largest Aboriginal

reserve at that time. At its largest Coranderrk extended over some 4859 acres, a small part of which is now occupied by Healesville Sanctuary and Coranderrk Nature Conservation Reserve (which also includes several scar trees) but most of the area is now private land. Those who settled at Coranderrk were from many different Aboriginal groups including Woi wurrung, Boon wurrung, Daung wurrung, Dja dja wurrung and Watha wurrung peoples. By 1875 there were 158 people on the reserve; however an outbreak of measles that year killed 38 people and left many others with respiratory problems.^{26, 28}

By the mid 1870s the success of a hop farming enterprise on the mission led to increasing pressure from neighbouring farmers to close the station. Residents of Coranderrk, including well known artist and political activist William Barak, sent deputations to the Victorian government during the 1870s to 1880s, protesting their lack of rights, poor living conditions and, with the resignation in protest of Superintendent John Green in 1875, the imminent threat of settlement closure. Despite ongoing resistance Coranderrk was scaled back and eventually closed in 1924 with most of the 42 residents moved to Lake Tyers Mission Station in Gippsland. The Government reserve was finally revoked in 1948 (except the cemetery) and much of the land alienated under returned soldier settlement schemes.^{26, 27}

In 1998 the Commonwealth-funded Indigenous Land Corporation purchased around 81 hectares encompassing part of the historic Coranderrk homestead. In 1999 ownership was transferred to the Wandoon Estate Aboriginal Corporation (operated by Wurundjeri people).²⁹ The cemetery site is owned by Wurundjeri Tribe Cultural Heritage and Land Compensation Council.³⁰

There are no active native title claims in the investigation area.

Figure 2.4

The Aboriginal Mission Station, Coranderrk, c.1880-1881.

A photograph of the Mission Station taken from a distance to show the layout of the buildings in the early 1880s. Fred Kruger, 1831-1888, photographer. Pictures Collection State Library of Victoria (H2006.123/9).



Non-Aboriginal heritage – settlement history and land use patterns

The Dandenong Ranges and both the Yarra Ranges and Yarra Valley have provided timber, agricultural produce, drinking water, recreation and tourism since the mid 1800s. In the earliest years of European settlement the region was part of an expanding pastoral industry. Surveyor Robert Hoddle first explored the upper Yarra in 1844, after searching for the headwaters of the Yarra River as early as 1838. In that same year three Scottish brothers, Donald, William and Alexander Ryrie, and James Graham set up Yering homestead near Yarra Glen. They grazed cattle, planted vegetables and fruit trees including the first vineyard in the Lilydale district. At this time pastoralist Rev James Clow's original vast 'Tirhantuan' cattle run extended from Avonsleigh and Macclesfield to the western foothills of the Dandenongs, near present day Rowville and Narre Warren.^{31, 32}

In the late 1850s the discovery of gold near Warburton, Emerald and along many tributaries of the Yarra including Starvation Creek, McMahons Creek, and Hoddles Creek led to an influx of miners. Although the goldfields were relatively modest, mining continued to yield gold and townships sprang up in these areas.

From the 1880s fertile soils were developed as fruit-growing areas. Melburnians were attracted by the pleasant scenery found along the Yarra River, the Dandenongs and Yarra Ranges, and encouraged further by the opening of a railway line from Melbourne to Upper Ferntree Gully in 1889. Artists from the late 19th century Heidelberg School drew inspiration from the landscape of the Yarra Valley. Wider settlement came with the depression of the early 1890s, under land grant schemes in settlement areas at places such as Monbulk and Mooroolbark. During the 1920s and 1930s the more mountainous parts of the region grew in popularity as tourist destinations for day-trippers and as a weekend retreat. Country houses and gardens became popular, and guesthouses catered to casual visitors, while more humble weekend shacks sprang up in settlements through the Dandenongs and beyond.

Timber harvesting became a major industry supplying the needs for mining, railways, wharves and fencing. The Lilydale to Warburton railway opened in 1901 further promoting the timber trade. Sawmills were established in Powelltown, Warburton, Britannia Creek and the Little Yarra region. The Upper Ferntree Gully to Gembrook narrow gauge line, known affectionately as 'Puffing Billy' railway, opened in 1900 to serve the local farming and timber community. It stopped running in 1953 after a landslide blocked the line between Selby and Menzies Creek. The line was operated from 1962 as a tourist railway on the remaining usable sections. Since then, the Puffing Billy Preservation Society has restored the

Gembrook to Belgrave section—where it meets the suburban railway network. Puffing Billy is reported to be one of the most popular steam heritage railways in the world.

Following the gold rush and Melbourne's 1880s boom it was clear that new water storage reservoirs would be needed to support the growing population. Today Melbourne is one of five cities in the world with protected water catchments providing a significant barrier against contamination of the water supply. Around 80 per cent of Melbourne's drinking water comes from uninhabited and closed water catchments focused on water storages in the Yarra Ranges adjoining the investigation area. The Yarra catchment includes Maroondah Dam (1927), O'Shannassy (1928) and Silvan reservoirs (1932). In 1957 the larger Upper Yarra Reservoir was completed, nearly tripling Melbourne's total water storage to around 300,000 megalitres. Construction of the Yarra Valley Conduit and Silvan-Cardinia main improved the ability to transfer water between these reservoirs, and to allow water from the Thomson River to be transferred to Cardinia Reservoir. The vast Thomson Reservoir was completed in 1984 as a long-term storage for transfer to Melbourne via Upper Yarra and Silvan reservoirs during drought periods.²¹

Post-World War II migration stimulated a new wave of settlement across the region supported by soldier re-settlement programs, relatively cheap land prices and the area's natural beauty. With car transport more readily accessible, the suburbs spread east from the city during the 1950s and 1960s, and the Dandenongs and Yarra Valley became a more permanent residential area for those prepared to commute to work.

Establishment of conservation and passive recreation areas in this region in the late 1880s illustrates a changing community emphasis towards the protection of public land for non-economic purposes: mainly recreation in a natural environment. For example, Fern Tree Gully forest—reserved as a place of public recreation—was popular for picnicking, nature study and walking from the 1880s. In 1927 Fern Tree Gully forest was gazetted as a national park and was later merged with other areas to form Dandenong Ranges National Park in 1987. The history of conservation activities in the region provides an important context for the current Investigation and is described in chapter 4.

The Yarra Valley remains a popular day-trip and tourist area, featuring a range of natural features and agricultural produce, including a significant food and wine industry. In particular the Yarra Valley region is widely known for its high quality cool climate wines, orchard fruits and berries.

Current land uses – agriculture

Despite its small size, the Yellingbo investigation area accommodates a diversity and intensity of agricultural enterprises that few other areas in Australia can match. Fertile soils, relatively high and dependable rainfall, and varied topography provide suitable conditions for many products. The area's proximity to markets and potential labour in Melbourne add to the attractiveness for many producers, particularly given the expanding population of Melbourne (see section 2.4). The diversity of production is shown in table 2.2 which lists the main commodities produced in the different agricultural land use categories and the predominant locations for each.

Yarra Ranges Council estimates agriculture and horticulture, including wine production, across the municipality to be worth some \$4000 million to the economy with nearly 2000 permanent and approximately 3000 additional seasonal workers employed in the key months of November to April. In addition programs are underway to capitalise on the relationship between agriculture and tourism, particularly the growing community interest in farmers markets, regional foods and wines, and farm-stay or bed and breakfasts across the Yarra Valley region.

Apart from some public land licensed mostly for stream frontage grazing by cattle, virtually all agricultural production in the investigation area is from private land.

However, many enterprises rely on water provided under licence from public authorities, using private infrastructure that is often located on public land—diversion pumps and pipes, for example. In addition, much of the infrastructure on which the producers and their communities rely is on public land, e.g. roads, schools and recreational opportunities. Native vegetation on public and private land is essential for the maintenance of the region's biodiversity and, therefore, the overall sustainability of agribusiness and the community more generally.

The *Horticulture for Tomorrow* program is developing a horticulture industry natural resource management strategy. This program will develop links between specific industries and catchment management plans. Through this project the Centre for Agriculture and Business–Yarra Valley (now Agribusiness-Yarra Valley), the Department of Primary Industries, and Horticulture Australia have identified that there is currently limited understanding of industry's impacts on the region's natural resources. It has found that, in general, industry places a low importance on natural resource management and focuses on productivity improvements and economic outcomes. Water and waste management are important issues for some sectors of the industry and can be used as vectors to raise the low profile of biodiversity with industry and, in particular, native vegetation management obligations or provisions.

Table 2.2

Major land uses in the Yellingbo investigation area by commodity

Commodity	Predominant location and comments
Strawberries, other berries and cherries	Coldstream to Silvan
Wine	Coldstream to Hoddles Creek
Cut flowers and nurseries	Silvan to Emerald
Potatoes	Yellingbo to Gembrook
Chickens (eggs, broilers, breeding)	Yellingbo to Macclesfield
Apples and pears	Coldstream to Launching Place
Dairy	Yarra River flats
Beef	many places not favoured for other products
Other such as lettuce, brassicas, lemons, 'alternative' livestock (e.g., alpacas)	small areas, scattered

Current land uses – recreation and tourism

Scenic landscapes, proximity to Melbourne and an increasing resident population make the investigation area popular for recreation and tourism. Diverse topography, farming and natural bushland on public land contribute to the available range of experiences. Well known as a region producing quality wine and food, visitors interested in a gourmet experience are well catered for. Resident and visiting outdoor enthusiasts can also enjoy cycling, horse riding, walking, mountain bike riding, car touring, exploring the Lilydale-Warburton rail trail and nature study. Conservation volunteering in the region is very popular, with many local residents and visitors active in Landcare and Friends groups.

In many ways, the area is known for its diversity of opportunities more than for any one activity. For example, a weekend trip to the Yarra Valley may involve some wine tasting, but is also likely to include several other activities such as a walk through nearby bush, visiting a farmers' market, a drive through the country, a picnic or a ride on a push bike.

The role of public land in these activities varies but makes a very important contribution to the overall package. As a result, even activities that take place entirely on private land, such as berry picking, benefit from visitors who are also attracted to the area for its scenic landscapes and diversity of other activities on offer, both of which rely heavily on public land. In terms of specific activities, public land is particularly important for car touring, horse riding, and for nature study, both in the wild and at Healesville Sanctuary. Other specific public land sites of importance for recreation and tourism include the Puffing Billy historic railway, ornamental gardens in the Dandenongs and the Lilydale-Warburton rail trail.

The Lilydale-Warburton rail trail crosses the width of the investigation area. The original railway was built in 1901 to transport produce from the Yarra Valley to Melbourne and was closed in 1965. Community support led to the conversion of the old railway easement into a recreational asset in the 1990s. The rail trail is almost 40 kilometres long and features scenic landscapes and a gentle gradient. The trail is popular for cycling, horse riding and short and long walks.

In the part of the investigation area in the Dandenongs near Sassafra Creek, three gardens in close proximity to one another are an attractive destination for garden enthusiasts. The Alfred Nicholas Memorial Gardens, George Tindale Memorial Gardens and Pirianda Garden locations are also popular for hosting functions such as weddings. Donated to the government, these gardens showcase exotic plants against a background of native trees. Together with the nearby R.J. Hamer Arboretum, National Rhododendron Gardens, William Ricketts Sanctuary, Dandenong Ranges National Park and a variety

of private businesses such as nurseries and tulip farms, they form a cluster of similar attractions in this traditionally popular area.

Puffing Billy, the historic steam train, runs between Belgrave and Gembrook near the southern boundary of the investigation area. The scenic route takes visitors through forests and farmland, affording occasional views to Port Phillip Bay. Restored locomotives and carriages provide visitors with an experience of the pre-1930s railway. Puffing Billy is operated by the Emerald Tourist Railway Board under the *Emerald Tourist Railway Act 1977*.

Horse riding

The Yellingbo investigation area is notable for its active residential community of recreational horse riders. A number of private properties have horse arenas and/or provide agistment services and many pony and riding clubs are located in the investigation area and surrounds. Commercial enterprises are limited to horse riding lessons and short trail rides, mainly on private property. Nearby large public land blocks are more attractive for these enterprises. The Shire of Yarra Ranges Equestrian Strategy³³ noted an increasing trend of recreational horse riding in the municipality. This strategy estimated that in 2001 there were 5000 horses in the Council area stimulating over \$32 million in associated economic activity.

Many residents enjoy the ability to ride directly from their property without the need to float horses to a suitable location. This is usually done on an individual or social basis and is particularly popular in the Macclesfield area where the landscape of gently rolling hills and scattered native vegetation and public land links is well-suited to it. Often, locals ride on the roadside for part of their outings. On roads which are narrow and winding, such riding can be hazardous. This is exacerbated on roads which have been upgraded to bitumen as these experience increased traffic moving at faster speeds, resulting in greater exposure for roadside riders.



Nature study

Bird watchers and naturalists are attracted to the Yellingbo area by the chance to see some of its rare or threatened species (see section 2.2), as well as the general abundance and diversity of species and habitats. Many of the elements enjoyed by walkers and horse riders also enhance the experience for naturalists taking a bird walk or nature ramble. While nature study and appreciation can be an individual pursuit, clubs are active in holding outings in the investigation area. Located within and outside of the investigation area, these groups include BirdLife Australia's Yarra Valley Branch, who have published a guide to the area's birds, and the Field Naturalists Club of Victoria.

Healesville Sanctuary, at the northern edge of the investigation area, specialises in displaying native Australian animals. The sanctuary exhibits a number of iconic species, including the endangered Leadbeater's possum and helmeted honeyeater. In 2011-2012 there were 329,000 visitors to Healesville Sanctuary.

Landcare and Friends groups

A number of volunteer Landcare and Friends groups are active in the investigation area. These volunteer groups have taken on important conservation roles including tree planting; species monitoring; rubbish, pest animal and weed removal; soil conservation; management of run off; and community education. While conservation is a key focus, these groups provide a valuable opportunity for people to meet and interact with others who share similar interests. Participation in Landcare and Friends groups builds a sense of community and connection to the local environment.

Groups in the investigation area include the Friends of the Helmeted Honeyeater, Friends of Leadbeater's Possum, Friends of Hoddles Creek and Friends of Wright Forest. Landcare groups in the investigation area include Macclesfield, Yarra Valley Equestrian, Southern Dandenongs, Johns Hill and Monbulk Landcare Groups.

Tourism industry

Known for its wineries, the Yarra Valley's proximity to Melbourne makes it easily accessible for day trips or short getaways. Many visitor experiences in the area are provided by local producers. Visitors have the opportunity to visit wineries for tastings, cellar door sales and dining. There are also opportunities to experience local produce by picking fruit at orchards and berry farms. Adding further diversity to the tourism experience are enterprises such as flower, livestock (e.g. alpacas) and trout farms. For overnight stays, accommodation options include bed and breakfasts, apartments, cottages and caravan parks.

The visitors that come to the region to enjoy its diverse attractions underpin a significant tourism industry, making an important contribution to the regional economy.

However, it is difficult to precisely quantify the industry. The geographic units under which information has been collated extend significantly beyond the investigation area, e.g. Tourism Victoria's Yarra Valley and Dandenong Ranges region, or the Yarra Ranges Council area. Also, many visits are based around activities within and beyond the investigation area. As an indication however, Yarra Ranges Council estimated that economic output from tourism in the municipality in 2003-2007 was between about \$200 million and \$380 million per year and generated about 1500 to 2000 jobs. Tourism accounts for about four per cent of the municipality's economy and six per cent of its jobs. It is worth noting that these percentages will be much higher in the investigation area because the largest sector of the economy—manufacturing, based in the urban part of the municipality near Lilydale—has very little presence in the investigation area.

Information on trends in local tourism is also somewhat compromised in its interpretation. Many of the main influencing factors operate well beyond the region, for example currency fluctuations and economic conditions in source markets. Nonetheless, in the Tourism Victoria Melbourne East sub-region, which covers the investigation area, the 2008-09 visitation levels and trends were as follows:

- ✦ some 34,500 international overnight visitors – a 50 per cent increase over the previous ten years
- ✦ nearly 400,000 domestic overnight visitors (spending over 900,000 visitor nights) – also a 50 per cent increase over the previous ten years
- ✦ about 1.8 million domestic day trips – a decrease of around 10 per cent over the previous ten years.

The two increases are considerably larger, and the decrease slightly less, than the statewide average for the same period.

In addition to the efforts of state organisations, such as Tourism Victoria and Parks Victoria, and the individual businesses, tourism in the region is promoted and marketed by Yarra Ranges Council, Yarra Valley Regional Marketing, Yarra Ranges Business and Tourism and Yarra Valley Regional Tourism Association, as well as groups associated with particular activities such as the Yarra Valley Food Group and Yarra Valley Winegrowers Association.

Victoria's estimated population at June 2011 was 5.35 million people, an increase of 84,200 from June 2010. Around 4 million of these people were living in Melbourne which grew faster than any other Australian capital city over the last 10 years.³⁴ The Yellingbo investigation area is largely within the municipality of Yarra Ranges with a relatively small area of Cardinia Shire inside the southern boundary. The demographic character of the latter area is apparent in its designation as part of the hills sub-region of Cardinia Shire, which is more similar to the municipality of Yarra Ranges than other Cardinia sub-regions: the farming communities of the Westernport rural sub-region and the urban character of the growth area sub-region covering Beaconsfield, Berwick and Pakenham. Figure 2.5 shows this urban growth zone, to which public land managers and others are already attributing increased visitation in and near the southern part of the investigation area. Figure 2.5 also shows that, apart from 11 small urban growth outliers

around towns, the investigation is in the Yarra Valley and Yarra Ranges Green Wedge, which effectively limits increases in population density to those towns. Population information for some of the main towns in and adjoining the investigation area is shown in table 2.3.

Within the investigation area there is a growing community of residents that have moved to this area for lifestyle reasons (often called 'tree-changers'), as well as increasing numbers of day visitors from the rapidly expanding urban residential areas around Pakenham, as well as Cockatoo and Emerald. However as noted above overall domestic day visitation to the area has been decreasing over the last decade. Small subdivisions were made around the townships of Launching Place and Woori Yallock in the early 2000s but within the investigation area the population is largely spread along the small rural townships branching off the main roads such as the Warburton Highway and Belgrave-Gembrook Road. Emerald is the largest centre in the investigation area with approximately 6000 residents.³⁴

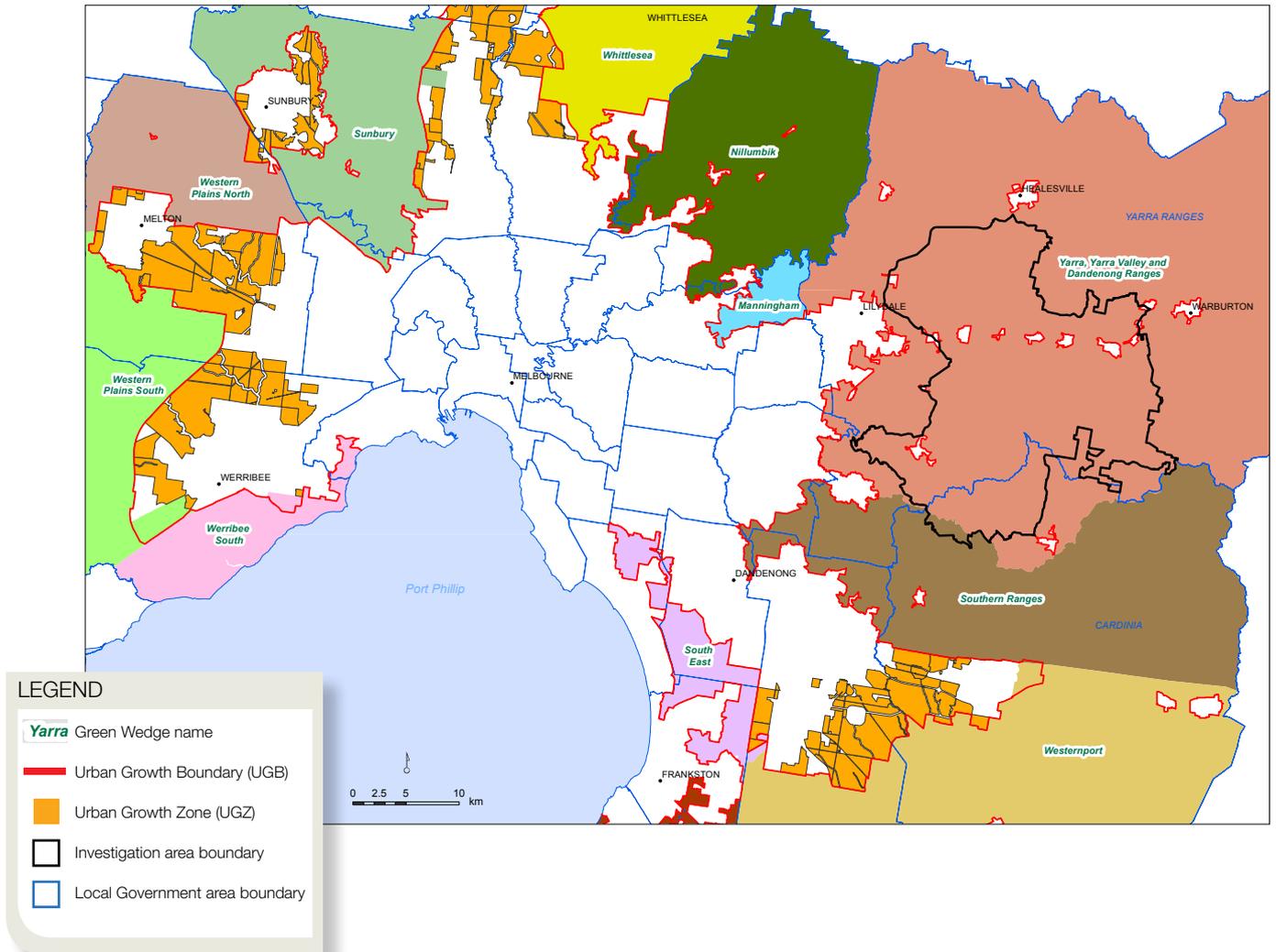
Table 2.3

Population information for townships in and near the investigation area³⁴

Town/suburb	persons 2011	persons 2006	persons 2001	greater than 10 per cent change over 10 year interval
Cockatoo	4400	4560	3483	growth
Emerald	5813	6135	6111	
Launching Place	2492	2599	1600	growth
Monbulk	3456	2715	2732	growth
Seville East	833	621	610	growth
Wesburn	1178	619	567	growth
Woori Yallock	2806	2809	2004	growth
Yarra Junction	2297	1740	1648	growth
Healesville	6839	6566	7132	
Warburton	2171	2288	1991	
Gembrook	2149	1628	712	growth
Lilydale	15,649	13,887	12,764	growth
Yarra Ranges Council	144,541	140,217	137,113	
Cardinia Shire	74,176	57,115	45,305	2nd fastest growth in Victoria
Melbourne (statistical division/ major statistical region - 2001)	3,999,982	3,592,591	3,338,704	growth
Victoria	5,354,039	4,932,423	4,612,097	growth

Figure 2.5

Green wedges and growth areas and boundaries in and around the Yellingbo investigation area



3 Public land use



3.1

Overview of public land use categories

A key driver for the Yellingbo investigation has been the search for management arrangements to best conserve biodiversity and provide ecological connectivity in a landscape where options are limited because relatively little public land remains and what does remain is very fragmented. The investigation area has been delineated accordingly: it abuts but excludes the large blocks of public land in national, state and regional parks and state forests on the surrounding Dandenong, Bunyip and Yarra ranges. The entire investigation area covers 51,370 hectares, with public land comprising 5990 hectares or 11.6 per cent in small to medium-sized fragments and linear strips. Nearly 95 per cent—some 5664 hectares—of this public land is Crown land, including 2336 hectares of government road reserves. The remaining areas of public land are freehold properties owned by State government agencies (see table 3.1). Freehold land owned by local government is not public land as defined in the VEAC Act, although Crown land managed by local government as a committee of management is public land under that definition.

The first systematic assessment of public land use in the region was undertaken as part of the extensive Land Conservation Council (LCC) Melbourne Study which extended from Anglesea north to Daylesford, east to Mansfield and south to Wonthaggi.²⁸ The final recommendations were completed in 1977. These were superseded by the LCC Melbourne Area District 2 Review, a review of essentially the eastern half of the original Melbourne study area, the final recommendations of which were published in 1994 (see figure 3.1). LCC final recommendations reports, annotated to reflect government variations and amendments at the time of approval, and subsequent changes, are available from the VEAC website www.veac.vic.gov.au.

Most current public land use in the Yellingbo investigation area is the result of these government-approved LCC recommendations. The current extent of land in each public land use category in the investigation area is shown on map A (back pocket of this report) and in table 3.2. Public land ownership is shown in table 3.1. In some areas the final LCC recommendations have been superseded by subsequent government decisions; only the most current land use is shown in map A and table 3.2.

Around 1835 hectares (about 30 per cent of all public land in the investigation area) is in categories that are part of the 'protected area' or conservation reserve system managed primarily for biodiversity conservation (appendix 4). Nature conservation reserves (1489 hectares total) comprise most of the protected area estate. These reserves are described in more detail overleaf.

Public land is classified into the following major land use categories:

- ✦ national and state parks
- ✦ nature conservation reserves — formerly known as flora and fauna reserves
- ✦ Trust for Nature protected areas — conservation properties owned by the Trust for Nature
- ✦ natural features (conservation) areas — bushland areas, streamside areas, natural and scenic features reserves, geological and geomorphological features reserves and caves
- ✦ natural features (other) areas — stream frontages, wildlife areas, and lake reserves
- ✦ historic and cultural feature reserves
- ✦ regional parks
- ✦ state forest
- ✦ community use areas — education areas, recreation reserves, parklands and gardens, buildings in public use such as schools or public halls, recreation trails, rifle and other ranges
- ✦ water production areas — water storage reservoirs and bulk distribution facilities
- ✦ services and utilities areas — roads, railways, water and sewerage services, cemeteries, police stations, court houses, public offices, hospitals, public housing, municipal buildings and depots
- ✦ uncategorised public land — public land with no committed use but, subject to investigation, a future public use may be determined
- ✦ other categories — none found in this investigation area, e.g. alpine resorts, coastal reserves, marine national parks, earth resource areas and other services and utilities areas such as for communications, survey and navigation.

Each land use category defines the primary purpose and objectives for the management of land assigned to the category. For many public land use categories additional purposes are also defined, as well as uses that are and are not permitted. Each land use category is generally subject to particular legislation and management arrangements, often reflected in the legislation and reservation purpose for Crown land, e.g. national parks are established and managed under the *National Parks Act 1975*, nature conservation reserves are established under the *Crown Land (Reserves) Act 1978*.

In addition to public land use categories, there are three types of overlay that may be applied to public land. These are heritage river, reference area and declared or proclaimed water supply catchment.

Figure 3.1

Location of the VEAC Yellingbo investigation area in relation to the LCC Melbourne District 2 Review study area

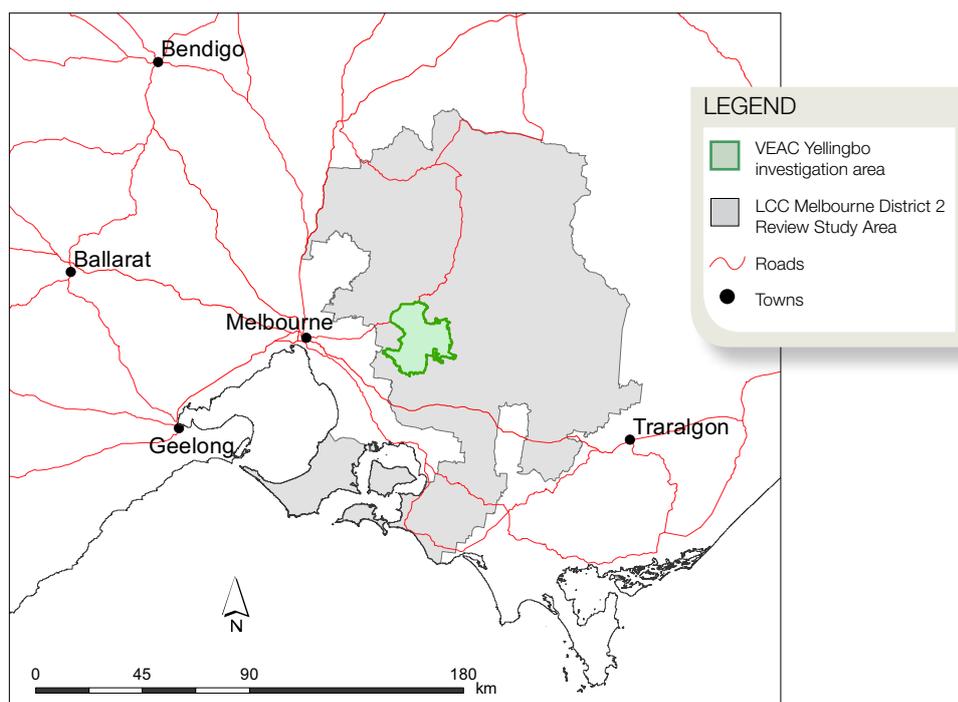


Table 3.1

Public land ownership in the Yellingbo investigation area

Public land owner	Area (ha)
Crown (including 2336 hectares of road reserves)	5664
Melbourne Water	143
Yarra Valley Water	59
Department of Education and Early Childhood Development	50
VicRoads	32
Emerald Tourist Railway Board ¹	22
Trust for Nature	14
Country Fire Authority	2.2
Department of Planning and Community Development	1
VicTrack	0.3
Department of Health	0.3
Ambulance Victoria	0.3
Total extent of public land	5990

Note:

¹ Areas of freehold land owned by the Emerald Tourist Railway Board (part of Puffing Billy Historic and Cultural Features Reserve) in Cardinia Shire have been uncovered and added to this total since publication of the VEAC Metropolitan Melbourne Investigation Final Report.



Table 3.2

Public land use categories in the Yellingbo investigation area

Public land use categories	Area (ha)
Nature conservation reserve ¹	1489
Trust for Nature protected area ¹	14
Natural features (conservation) area ¹	332
<i>Natural and scenic features area</i>	0.1
<i>Bushland area</i>	310.8
<i>Streamside area</i>	20.8
Natural features (other) area	874
<i>Stream frontage (including stream beds and banks)</i>	873.7
<i>Natural features area (general)</i>	0.3
Water production area	0.4
Historic and cultural features reserve	46
Community use area	601
<i>Education area</i>	347.3
<i>Recreation area</i>	25.7
<i>Parklands and gardens</i>	62.1
<i>Recreation trail</i>	88.6
<i>Buildings in public use</i>	77.5
State forest (small outliers of Yarra Ranges State Forest)	2.4
Regional park (small area of Kurth Kiln Regional Park)	19
Services and utilities area	2593
<i>Road (36.9 ha parcelised, 2336 ha unparcelised²)</i>	2373
<i>Railway</i>	0.3
<i>Hospitals, public offices, justice</i>	3.3
<i>Cemeteries</i>	9.1
<i>Water and sewerage services</i>	207.3
<i>other services and utilities area</i>	0.2
Uncategorised public land	18
Total extent of public land in the investigation area	5990
Total extent of investigation area (all private and public land)	51,370

Notes:

¹ These public land use categories are part of the protected area system.

² Parcelised refers to the land status in mapping terms, that is, land that has been acquired or set aside for roads and has been assigned either a freehold title or Crown allotment. Unparcelised road reserves are strips of land set aside between parcels and have not been assigned a freehold title or Crown allotment. Areas set aside or acquired for roads may contain public roads, closed roads, local tracks or no formed road at all. Some areas set aside for roads have been incorporated into other adjoining public land units such as some stream frontages and, notably, Sassafras Creek Nature Conservation Reserve; these areas are accounted for in the relevant other public land use category in this table.

As shown in table 3.2 the majority of public land in the Yellingbo investigation area comprises nature conservation reserves, government road reserves and natural features reserves. Each of these categories is discussed in the following descriptions.

Nature conservation reserves

The core of Victoria's protected area system is made up of national and state parks, and nature conservation reserves. Nature conservation reserves conserve rare or threatened species, vegetation types of particular conservation significance and valuable habitat. The primary land use objective is nature conservation, although some educational and scientific study and passive recreation are permitted where not in conflict with natural values.

There are four nature conservation reserves in the investigation area (appendix 4). The largest and best known because of the presence of several prominent threatened species is Yellingbo Nature Conservation Reserve (661 hectares); it is listed as a high priority reserve for management purposes.^{35, 36} The remaining three are Warramate Hills Nature Conservation Reserve (490 hectares), Sassafras Creek Nature Conservation Reserve (193 hectares) and Coranderrk Nature Conservation Reserve, also known as 'Coranderrk Bushland' (144 hectares).

Yellingbo Nature Conservation Reserve

Yellingbo Nature Conservation Reserve was first established in 1965 following a period of lobbying by bird watching and conservation groups concerned about the declining number of helmeted honeyeaters in the region. Initially 167 hectares along Cockatoo, Sheep Station and Woori Yallock Creeks were reserved for public purposes (conservation of wildlife) to provide habitat for this nationally threatened species which is Victoria's state bird emblem.

In 1977 the LCC recognised the natural values at this site and government accepted its recommendation that the reserve continue to be managed primarily for the conservation of wildlife, with secondary purposes of education and recreation where it does not conflict with the primary aim. Aided by Federal government financial support, the reserve was subsequently expanded through voluntary private land purchases and donations. By the time the LCC completed the Melbourne District 2 Review in 1994, some 590 hectares were included in the reserve. At that time additional stream frontages along Woori Yallock Creek were recommended to be added to the reserve.

Currently part of the reserve is reserved as a State Wildlife Reserve under the *Wildlife Act 1975*, while part is reserved under the *Crown Land (Reserves) Act 1978*. Much of the latter area is reserved for the 'propagation of wildlife' or 'the preservation of wildlife habitat'. The dual legislation operating across the reserve has impeded the development and implementation of specific management regulations.

Expansion of this conservation reserve over the last 20 years is largely the result of voluntary private land purchases and donations rather than addition of adjoining areas of public land. Trust for Nature has played a major role in negotiating and acquiring land for the expansion of the reserve (see box 4.2).

Foremost among the environmental values of the reserve are the lowland forest population of Leadbeater's possum, the only remaining wild population of helmeted honeyeater, and the only patch of its key habitat, Sedge-rich *Eucalyptus camphora* Swamp Community, a threatened community under the *Flora and Fauna Guarantee Act 1988*. Other significant values recorded in the reserve include glossy grass skink, powerful owl, green scentbark, growling grass frog, a sizeable population of swamp skink and occasional large numbers of swift parrot.

A revised management plan was completed for Yellingbo Nature Conservation Reserve in 2004. This plan addresses recommendations made in the Helmeted Honeyeater Recovery Plan 1999-2003 to protect and enhance habitat to allow the honeyeater to survive and expand in the wild.³⁶

Coranderrk Nature Conservation Reserve

This nature conservation reserve is currently managed by Zoos Victoria (Zoological Board of Victoria) as 'Coranderrk Bushland'. There is limited public access to the 144 hectare reserve; it is surrounded by a high wire fence. Cultural heritage management is undertaken in consultation with local Aboriginal people reflecting the significance of this area as a meeting place and later as part of the Coranderrk Aboriginal mission which operated from 1863-1924.

Very high vegetation diversity has been recorded at Coranderrk Nature Conservation Reserve including three species of state significance and over 75 species of regional significance. Threatened vegetation communities Swamp Riparian Complex, Swamp Riparian Woodland, occur where Boggy and Badger creeks cross the reserve. Extensive areas of Riparian Forest and Herb-rich Foothill Forest are also found here. This mixed habitat supports an equally diverse range of fauna species such as 12 species of bat—including southern myotis—powerful owl, lace monitor and grey goshawk.

Sassafras Creek Nature Conservation Reserve

This 193 hectare reserve comprises the riparian areas along Sassafras Creek, Ti Tree Creek, Menzies Creek and the lower sections of Emerald Creek. The reserve excludes Baynes Park reserve at Monbulk.

Helmeted honeyeater was previously found in this reserve, and the rare slender tree-fern still occurs in several locations. The reserve is largely vegetated with Damp Forest, Wet Forest and small patches of Cool Temperate Rainforest along Sassafras and Monbulk creeks. Riparian Forest is the predominant EVC along Woori Yallock Creek.

Warramate Hills Nature Conservation Reserve

This 490 hectare area was acquired by the government in 1992 and forms a prominent area of steep hills rising on the west side of the Yarra River floodplain. Located on the junction of the Yarra River and the Woori Yallock Creek, this conservation reserve contains a relatively large and undisturbed area of native vegetation, not generally found in the Yarra Valley outside the major parks and state forest. The vegetation is largely Grassy Dry Forest and Herb-rich Foothill Forest. On the southern aspects of the hills, Lowland Forest, Damp Forest and Riparian Forest are found in the valleys. There are also some areas of former farmland dominated by exotic grasses, and a number of tracks cross the reserve, but public access is constrained by surrounding private land and the general steepness of the terrain within the reserve.

Trust for Nature protected areas

Trust for Nature owned conservation areas held for the long term are considered part of the protected area system. These properties are managed in a manner that is consistent with nature conservation reserves although public access may be restricted. Currently there are two Trust for Nature properties in the investigation area that meet these criteria: Emerald (4.2 hectares) and Wanderslore (Launching Place) properties (10.1 hectares).

In 1987 the late Constance Coleman bequeathed Wanderslore (Launching Place) to the Trust for Nature. Located near the Yarra River the site contains Lowland Forest and vulnerable Riparian Scrub/ Swampy Riparian Woodland Complex EVCs. Wattles, ferns and grasses with an overstorey of manna gum or messmate occur in gullies and along streams with narrow-leaf peppermint occurring along the higher slopes. Open forest with red stringybark, broad-leaf peppermint and long-leaf box occurs away from the creeklines. It is managed with support from The Friends of Wanderslore.

The Emerald (Charman Avenue) Trust for Nature property was acquired in 2011 fulfilling a commitment to the local community. This site hosts a large population of threatened white star-bush and provides habitat for the threatened powerful owl. This property will be subdivided, and part

covenanted. Part of the site is to be transferred to Cardinia Shire with a conservation covenant and managed for conservation purposes in conjunction with the Shire's Emerald Quarry Reserve.

As detailed above, Trust for Nature also has a long association with the land purchase program to expand and restore Yellingbo Nature Conservation Reserve. The Trust also has a covenanting program whereby covenants are voluntarily attached to the property titles of private land to protect natural values. There are 14 property covenants in the Yellingbo investigation area, covering a total of 125 hectares. Because of privacy issues it is not appropriate to identify specific properties here, and because they are on private land they are outside the scope of VEAC investigations; however VEAC takes them into consideration as part of the conservation landscape.

Historic and cultural features reserves

Historic and cultural features reserves are primarily established to protect places with highly significant historical values, including remnant historical features such as buildings, structures, relics or other artefacts. Puffing Billy Railway Historic area (45 hectares) and Yarra Junction Railway station (0.6 hectares) are the only historic and cultural features reserves on public land in the investigation area. Puffing Billy Historic area comprises Crown land (23.3 hectares) and land vested in the Emerald Tourist Railway Board (21.7 hectares).

Victoria's tourist and heritage railways provide for local and regional community involvement in public land management. These railways also benefit local business by attracting tourism. The *Tourist and Heritage Railways Act 2010* was established to provide enhanced land tenure and asset management for non-profit tourist and heritage railway operators. This Act provides clarity and consistency in relation to land tenure arrangements, asset use, and access to a voluntary registration scheme that will promote improved performance and business practices. It establishes a consistent land tenure scheme for tourist and heritage railway operators using Crown land vested in VicTrack. However it does not apply to the Puffing Billy railway, which operates under the *Emerald Tourist Railway Act 1977*.

A range of other mechanisms, such as heritage registers and planning schemes protect heritage places on both public and private land, including the range of sites associated with Aboriginal and European history in the investigation area. In some places a particular feature may form a key visitor attraction but the historic values are managed as part of a wider suite of values and uses. This is the case along the Lilydale-Warburton rail trail, for example, which is categorised as a community use area (see page 38).

Natural features reserves

Natural features reserve is a broad category that includes several sub-categories of public land that have similar objectives and other relevant characteristics; individual reserves are usually less than about 30 hectares, for example. For clarity, they can be grouped such that those sub-categories considered as part of the protected area system are described as natural features (conservation) reserve, and those that are not are described as natural features (other) reserve:

1) Natural features (conservation) reserve:

bushland areas, natural and scenic features areas, geological and geomorphological features reserves, streamside areas and cave reserves.

2) Natural features (other) reserve:

stream frontages, wildlife reserves (hunting permitted) and lake reserves.

While the recorded natural values of these reserves are not as significant as those of national parks and nature conservation reserves, these areas play an important role in the protection of remnant native vegetation and habitat, and of natural landscape character, particularly those that are considered as protected areas. They also provide opportunities for education and passive recreation. Some natural features reserves, especially those not considered protected areas, have resource uses such as stream frontage grazing or hunting (in season) in wildlife reserves.

A number of bushland areas throughout the investigation area include remnants of native vegetation. In the Yellingbo investigation area, there are 30 small bushland areas of less than 10 hectares designated and managed to maintain the distinctive vegetation characteristics of the region. The largest bushland areas in the investigation area are Beenak Bushland Reserve (125.7 hectares) and Wright Forest Bushland Reserve (111.2 hectares).

Scenic reserves encompass areas of particular visitor interest such as waterfalls and lookouts. The only scenic reserve in the investigation area is the small Olinda (Harold St) Scenic Reserve (0.1 hectares). There are no geological and geomorphological features reserves in the investigation area.

Streamside reserves generally include areas of nature conservation and recreation value along stream frontages. The three relatively small, isolated streamside reserves (total area of 21 hectares) in the Yellingbo investigation area are located on the Yarra River, Dee River and Woori Yallock Creek. All are wider than the typical 20-30 metres Crown land stream frontage and located at scenic or picnic areas accessible for passive recreation.

Most of Victoria's permanent river or stream frontages that had not already been alienated were permanently set aside for public purposes in the 1880s. The areas

set aside varied in width from around 20 to 60 metres from the top of the stream bank, mostly 20 metres, wider strips generally being applied along larger waterways. There are about 875 hectares of stream frontage reserves (specifically categorised as natural features reserves) in the investigation area. In this largely cleared landscape, stream frontages act as important biological connections between larger blocks of public land as well as forming a key visual feature. Although of lesser extent than some other natural features reserves, stream frontage reserves serve as important links to sustain ecological function across the landscape. Management of riparian land along streams is important to retention of natural values of both the local site and also for the region. There are a number of programs operating in the investigation area that encourage private land owners and Crown land licensees to manage stream frontages in a manner that protects and enhances these natural values. These programs are discussed in more detail in section 3.3 and chapter 4.

In some places there is no public land frontage on one or both banks of the river, and in some locations the Crown frontage is a public land use category other than *Natural features reserve - stream frontage* e.g. Haining (Farm) Park Education Area and Yarra River (Everard Park) Streamside Area.

The Yarra River Heritage River extends approximately 103 kilometres in length from Warburton to Warrandyte along the riparian corridor. Around 42 kilometres of the heritage river, from Millgrove to near Healesville, is in the Yellingbo investigation area.



Community use areas

Community use areas are primarily used for education, recreation or other specific community purposes. Some of these areas may also have native vegetation and landscape values. Community use areas include:

Recreation reserves:

mostly small reserves close to townships with facilities for organised sports and informal recreation e.g. sports ovals

Parklands and gardens:

small intensively used community parklands, playgrounds and ornamental gardens

Reservoir parks:

small intensively used parklands, playgrounds and ornamental gardens associated with water supply reservoirs

Recreation trail:

linear trails for cycling, horse riding and walking, for example Lilydale-Warburton rail trail

Buildings in public use:

such as government schools, public halls and libraries

Education areas:

most public land is available for educational use but such use is usually restricted to passive forms, mostly relying on nature observation. Education areas are specifically set aside for the study of nature and functioning of natural ecosystems, using environmental analysis and field techniques, including long-term experiments.

There are many small community use areas across the investigation area, mostly located in townships. In addition there are three relatively large community areas: Haining (Farm) Park (69 hectares) comprising a working dairy farm, the extensive largely natural landscape of Hoddles Creek Education Area (278 hectares), and the Lilydale-Warburton rail trail (88 hectares).

Education areas are a statewide network intended to encompass examples of the Victoria's major land systems and environments, with areas of undisturbed natural vegetation and sites altered by activities such as agriculture. Environmental education is the long-term primary land use. Hoddles Creek Education Area has minimal visitation, probably due to its relative inaccessibility and lack of on-site facilities. However the Friends of Hoddles Creek has an active interest in the area and has undertaken extensive vegetation surveys and some land management.^{6, 7}

Haining (Farm) Park is managed by Parks Victoria through a lease and provides for school groups to visit and learn about the operation of a working dairy farm. School excursions commenced in April 1975 and currently an estimated 1400 students visit each year. This site was part of a land bequest. It is listed on Schedule Three of the *National Parks Act 1975*.

The Lilydale-Warburton rail trail provides a trail of nearly 40 kilometres length from Lilydale to Warburton for use by cyclists, horse riders and walkers. The trail utilises the closed railway line and retains historic features of the railway and indigenous vegetation in some places.

Another notable community use area is Healesville Sanctuary. Originally known as Sir Colin MacKenzie Zoological Park, the 31 hectare sanctuary first opened to the public in the early 20th century and the Zoological Parks and Gardens Board—now Zoos Victoria—commenced operation of the site under the *Zoological Parks and Gardens Act 1936* in 1978.

Other public land use categories

Other land uses include a variety of services and utilities areas, and uncategorised public land. Services and utilities areas include cemeteries, road reserves, railway reserves, municipal buildings, hospitals, police stations, aerodromes, water towers and service basins, and water and sewage treatment facilities.

Road reserves

The primary purpose of road reserves is to provide for transport and access. However, vegetation on road reserves can have particularly high conservation, recreation and landscape values, especially in agricultural districts where native vegetation has been largely cleared. Geological features exposed in roadside cuttings are a resource for mapping the geology of an area and are often used as an educational resource. Road management arrangements are described in section 3.3. Mapping of government roads is problematic because in many instances, government roads have not been attributed a freehold title or Crown parcel and are therefore difficult to accurately map at a broad scale. There are an estimated 2336 hectares of 'unparcelised' government road in the investigation area and some 37 hectares of land designated for road use that is owned by VicRoads or has been issued Crown land parcel identification.

Uncategorised public land

Uncategorised public land is a broad category including land for which no specific recommendation or land use has been ascribed. Subject to further investigation or assessment a public land use may be determined. However, if there is no public land use or values present, the land may be disposed of by sale.

Conservation

Protection of conservation values is primarily achieved on public land. In Victoria the conservation reserve system (also referred to as the protected area system) consists primarily of public land permanently set aside for conservation of natural values as a primary objective. In the investigation area the total conservation reserve system is 1835 hectares largely consisting of nature conservation reserves (see appendix 4). The management of public land for enhanced biodiversity and conservation outcomes is a major focus of this investigation and is described in more detail in chapter 4.

Road management

In Victoria the road network is managed by a number of authorities. Responsibility has been allocated to VicRoads for freeways and arterial roads outside built up areas, to local municipal councils for arterial roads in urban areas and local roads, and otherwise to the relevant state agency, for example the Department of Sustainability and Environment (DSE) for forest roads. The primary objective of road reserves is to provide for transport and access. Unused government roads (i.e. those that are not in use for transport—often no formed road has been built) may be licensed by DSE to an adjoining land owner. In the investigation area 85 primary production licences on unused Government roads occupy approximately 90 hectares.

Management of roadsides is undertaken to maintain road functionality and safety, and may involve vegetation removal or trimming. Protection of conservation, visual amenity, landscape and recreation values along roadsides is important to the community. This is particularly the case where these values provide habitat for threatened plants or animals, or roadsides are an important visual element in the landscape, such as adjoining major tourist routes or in largely cleared landscapes.

Road management agencies develop plans and undertake detailed roadside vegetation mapping and surveys. For example, Yarra Ranges Council has assessed and mapped roadside native vegetation in the municipality, revealing several areas with a high density of significant vegetation such as the area around Macclesfield. Such mapping and roadside management plans provide a mechanism to identify sites with significant values, guide roadside maintenance or treatments, prioritise a works schedule, feed into planning regarding other issues where relevant (e.g. biodiversity strategies, and recreation planning such as for horse riding) and communicate with interested and affected parties.

When a road development is contemplated, a number of specialist studies are typically carried out to enable a full assessment of the potential impacts of options and to develop appropriate management plans to minimise

these impacts. This may include an environment effects statement which then provides the basis for the preparation of a detailed Environmental Management Plan, which is required before construction commences on new or re-developed roads.

Monitoring and evaluation of the ongoing effectiveness of maintenance and management activities is also incorporated into road management. Community consultation is an important part of many large-scale road management projects, such as the Macclesfield Road redevelopment undertaken in the early 2000s.

Fire management

The Department of Sustainability and Environment (DSE), together with Parks Victoria, is the fire agency responsible for managing fire on Victoria's public land. DSE must be prepared for both the inevitability of bushfire and the planned use of fire for protection of assets or for ecological purposes. DSE also works closely with the Country Fire Authority (CFA) on the rural-urban interface across Victoria. Each year both agencies attend the same fires on numerous occasions, with either DSE or CFA controlling the fire as the lead agency. CFA sits under the Victorian Department of Justice and reports to the Minister of Police and Emergency Services. CFA covers all of rural and regional Victoria plus Melbourne's outer suburbs. The CFA is largely resourced by volunteers and has a major role in community education, raising awareness about fire safety and planning for bushfires. A collaborative partnership approach exists between DSE and CFA and with other Emergency Management Partners (e.g. Melbourne Water) and this relationship is particularly important in fragmented landscapes where vegetation is inter-digitated across land tenures.

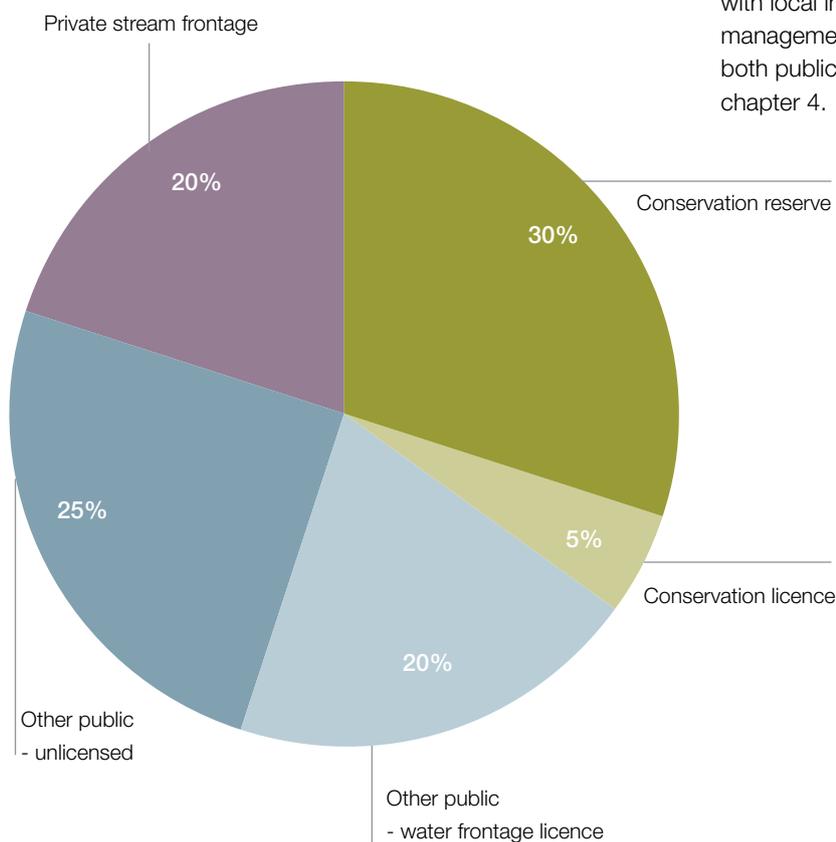
Many aspects of fire management and planning have been reviewed since the 2009 Victorian Bushfires Royal Commission.¹⁸ In September 2010, the Fire Services Commissioner role was established together with a revision of emergency management arrangements. The Commissioner has legislative responsibility for the overall response to a major fire in any area of Victoria. Arrangements provide clear and unambiguous command and control of, preparedness for, and response to bushfires in Victoria. The key objectives remain protection of human life, property, assets and environmental values from the potential negative or deadly effects of wildfire or inappropriate fire regimes.

DSE and partner agencies prepare a range of fire protection plans, management plans, operation plans and strategies. The *Code of Practice for Bushfire Management on Public land*¹⁹ sets clear risk management objectives and principles including an expanded planned burn program in response to the recommendations of the 2009 Victorian Bushfire Royal Commission.¹⁸ The Code

seeks to reduce the risk to human life, communities and the environment of major landscape scale bushfires, while acknowledging that this risk cannot be completely eliminated. In planning to meet this objective, human life is afforded the highest priority over all other considerations. The second primary objective focuses on maintaining or improving ecosystem resilience and to deliver ecosystem services such as water production, forest products and maintaining biodiversity values. In achieving these multiple objectives, there will be a range of options and a balance will need to be achieved between competing values and potentially negative impacts.

A major fire management planning tool is the 'strategic bushfire management plan'. This plan describes four fire management zones which in turn prescribe a primary fuel treatment aim. Considerations for zone placement include risk to human life, practical and achievable burning outcomes, fire regimes appropriate for specific vegetation types or ecological values, overall fuel hazard ratings and likely bushfire behaviour (see section 4.3).

Figure 3.2
Indicative extent of conservation, other public and private water frontage as percentages of total water frontage



Stream frontage management

As described in section 3.2, many stream frontages were set aside through permanent reservation in the 1880s. There are some areas where land was sold to the top of the stream bank or the whole area was alienated prior to that time. This is the case in some of the early settlement areas of Victoria such as along the Yarra River in parts of the investigation area. In some places, areas of stream frontage have returned to the public estate through acquisition of land for various reasons. The majority of public land along waterways in the investigation area is Crown land in natural features reserve – stream frontages or in other public land use categories such as nature conservation reserve, streamside area or education area (figure 3.2).

In the investigation area there are 331 Crown land licences and leases covering some 700 hectares of Crown land. Nearly half (154) are Crown land water frontage, primary production licences occupying a little over 400 hectares. Non-agricultural licences for conservation and riparian management purposes total around 97 hectares (45 licences). In some places DSE has reviewed licence conditions and has not renewed licences e.g. along Shepherd Creek. Together with Melbourne Water and the Port Phillip and Westernport Catchment Management Authority, adjoining land owners have contributed significantly to improving river health by fencing off frontages from domestic stock access, revegetating with local indigenous plants, and undertaking weed management programs. These works are undertaken on both public and private stream frontages as detailed in chapter 4.

Note:

The total area of water frontage is around 1700 hectares. Both this figure and the percentages are somewhat arbitrary in terms of the length and width of frontages included, particularly where they have not been surveyed. For example, 'private stream frontage' is an estimate of the extent of privately owned stream frontage that interrupts stretches of public frontage. The estimate would be much larger if it included the frontages of all streams with at least some public frontage and larger still if it included frontages of all streams, including ephemeral streams. Nonetheless, these figures remain reliable as indicative of the extent of land in the various groupings. 'Conservation licence' includes riparian management licences.

4 Land management for biodiversity



4.1

Locally-focused activities

One of the principal tasks of this investigation is to recommend ways to bring together and reinvigorate community and government work for biodiversity and thereby enhance ecological values in the investigation area. This chapter outlines the relevant community and government programs and activities to date. In the following sections, relevant conservation activities are divided into those that are almost entirely local in focus, those that have a strong local component within a broader program, and those that are a general part of broader statewide or national programs.

Melbourne Water Stream Frontage Management Program

Across most of Victoria, catchment management authorities (CMAs) have responsibility for regional river health, and management of waterways, regional drainage, floodplains and the environmental water reserve and water quality monitoring. However, in the Port Phillip and Westernport CMA region, Melbourne Water has this responsibility which it meets in partnership with the CMA. Melbourne Water is currently in the process of preparing a new 5-year regional river health strategy to replace the current strategy when it expires in June 2013. The new strategy will be called the Healthy Waterways Strategy.

The management of riparian land, whether public or private, is a key determinant of waterway health (see box 4.1). Melbourne Water's Stream Frontage Management Program is a voluntary cross-tenure land management program focused on protection of riparian land. Grants are available for work that protects or enhances riparian land, such as weed control, fencing to exclude grazing by domestic stock and revegetation with indigenous plants. Funding is also provided for off-stream stock watering points such as troughs and tanks and for on-going maintenance. Contributions to cover the costs of technical advice, education and training can also be provided. Preference is given to stream frontages of more than 50 metres in length, and to key rivers and creeks listed in the Regional River Health Strategy. To be eligible, an applicant must own freehold land that fronts a waterway, or manage Crown land stream frontage (licensed through the Department of Sustainability and Environment). Depending on the project, land owners may be required to undertake the works themselves for the duration of the agreement.

Funding contributions are made on a scaled basis, with a greater amount available the further the fence is installed from the top of the riverbank, e.g.:

10 metre setback – contributions up to 50 per cent

15 metre setback – contributions up to 65 per cent

20 metre setback – contributions up to 80 per cent

The minimum average setback funded is 10 metres from the top of the stream bank, with fencing often established along an agreed alignment between native vegetation and cleared land rather than the public-private land boundary. That is, on occasions public land (e.g., with a typical frontage width of 20 metres) is fenced in with and used as if part of the adjoining private land.

Typically the Stream Frontage Management Program is rolled out along targeted reaches of priority waterways. Such reaches are usually in the order of 10 kilometres in length over which the program runs for several years. Initially, letters seeking expressions of interest are sent to frontage owners and licensees explaining the program. Meetings are then arranged with those who respond in order to further explain the program. In the case of those who then wish to proceed, negotiations begin to set up a management agreement and arrangements for future works and ongoing management, the nature of which varies according to the characteristics of the frontage and the desires of the applicant. If there is no response to initial approaches, further approaches including face-to-face visits, may be made. Licensees of the highest priority frontages may be approached several times.

Since the program commenced in 1996, it has gradually increased the area of stream frontage in the Yellingbo investigation area managed primarily for conservation to around 90 hectares, spread over about 20 licences. Nonetheless, as shown in figure 3.2, there is still about four times more land under water frontage (grazing) licence than under riparian conservation licence.

It should be noted that some frontage works and conversions to riparian conservation licences are undertaken entirely voluntarily by licensees or adjoining landholders without licences. In addition, the Department of Sustainability and Environment may cancel or fail to renew water frontage licences, sometimes offering conversion to riparian conservation licence as an option.

Despite the success of these programs, some adjoining land owners remain resistant to subsidised management improvements on Crown land they occupy even when subsidies in the order of 80 per cent of fencing costs are on offer. Significant differences can exist in the understanding and opinion of what constitutes a healthy riparian environment, and who should bear the cost for fencing and ongoing land management such as weed control. Arguments are also made about fencing to reduce the risk of stock drowning, and conversely the risk of stock going thirsty if for example a water trough suffers equipment failure; therefore permanent stream access is often preferred.



Why is there a focus on stream frontages?

The terms of reference for the Yellingbo investigation concentrate on the area's biodiversity and ecological values, the threats to these values, and opportunities to reduce the threats and enhance the values. As is typical for fragmented landscapes, in the Yellingbo investigation area these values, threats and opportunities are generally much more prevalent along the region's waterways and their adjacent riparian zones than in other parts of the landscape. This is why stream frontages are central to VEAC's Yellingbo investigation and to many natural resource management programs.

Values

Stream frontages are a distinctive part of the landscape, supporting native vegetation and ecosystems generally not found elsewhere, such as riparian forests and swamps. The greater availability of water tends to make these environments very biologically productive and they often support more species in greater abundance than other parts of the landscape. The availability of water also allows stream frontages to act as refuges in times of drought and climate change. Variability in water flows often leads to heterogeneous environments in stream frontages which also make them valuable in the face of climate change. The condition of riparian vegetation is a major determinant of in-stream habitat and water quality. Finally, the linear configuration of stream frontages means that they are often the main or sometimes only corridors linking larger remnants of native vegetation and thereby providing avenues for plants and animals and their populations to migrate, disperse and intermingle. This may be especially important as climate change leads to changes in the distribution of habitats available to flora and fauna.

Threats

Many of the factors related to the values of stream frontages also lead to threats to those values. In particular, as well as being biologically productive, stream frontages are generally agriculturally productive and, as a result, compared to other parts of the landscape they tend to be more heavily cleared or disturbed, invaded by pest plants and animals, subject to soil erosion and compaction, and grazed, trampled and pugged by domestic stock. The availability of water and occasional flooding exacerbates some of these threats as well as those from related infrastructure such as for water extraction, drainage, bridges and residential purposes. Resultant impacts on water flows and quality, e.g. increased turbidity, pollution, eutrophication and

fouling from dead stock and waste products, usually extend for many kilometres downstream. The linear shape of stream frontages and their remnant native vegetation can make them difficult to access and manage, and prone to edge effects such as weed invasion, wind-throw of trees, and drying through increased exposure to sunlight. All of these factors continue to threaten the values of stream frontages.

Opportunities

The combination of high values under a high level of threat generates substantial scope for intervention to improve outcomes for the values. That frontages of most waterways in the investigation area are on public land greatly improves both the scope for action and the long-term security of improved outcomes; work done on private land, for instance, may be vulnerable to a change of ownership especially when ongoing active intervention is required, such as prompt suppression of new weed outbreaks. This opportunity to manage stream frontages for public good reflects the reasons why they have been retained in public hands for more than 130 years. VEAC's role in making recommendations for public land in the investigation area means that stream frontages must be fully considered. Finally, the extensive ongoing work of other organisations and individuals as documented in this chapter offers opportunities to build on, consolidate and integrate with their programs and further improves the potential cost-effectiveness of stream frontages as sites for intervention.

There are also many impediments, real and potential, to appropriate management to enhance values along stream frontages. Licensees often prefer status quo management for a variety of reasons including obviating the need for fencing (sometimes in flood-prone areas) and off-stream watering points for stock, retaining existing access for purposes such as stock movement or fire management, management control, concerns about the capacity of other managers (to control pests, for example), and the economic benefits of grazing. In addition, government agencies are often deterred by the laborious complexities of changing licensing and management arrangements, particularly in the absence of a clear directive from the government. However, there are now many examples across Victoria and in the investigation area of successful conversion of public stream frontages to management that enhances biodiversity values and water quality.

Melbourne Water Corridors of Green program

In addition to the Stream Frontage Management Program for individuals, Melbourne Water also offers funding and support to local councils and public land managers to improve river health through the Corridors of Green Program. Agencies are eligible for this funding for projects that improve river health such as weed control, fencing along rivers and creeks, revegetation (replanting), and creating management plans. A maximum of \$20,000 is available with matched funding required by the land manager (at least equal amount or monetary or in-kind contributions).

Melbourne Water community grants program

As well as assistance to individuals and government agencies, volunteers and community groups can apply to Melbourne Water for assistance and advice to protect and improve streamside vegetation on public land, raising awareness, training and education. Incorporated community groups, management committees, volunteer groups and Landcare groups can apply for grants focused on the health of rivers and creeks. Grants are given for activities such as weed control, fencing along rivers and creeks, and revegetation (planting) to a maximum of \$20,000. Support grants are also available to help with running and organising volunteer groups to a maximum of \$1000 with matched funding as either in kind or equal monetary value. Group support includes administrative activities, increasing public awareness and participation levels, training and educating the community about project work.

Since 1999 Melbourne Water has provided more than \$2 million in grants to community groups in the Yarra catchment alone. In 2010-2011 for example there were 32 community group grants distributed totalling more than \$106,000 in this catchment.

Yarra4Life

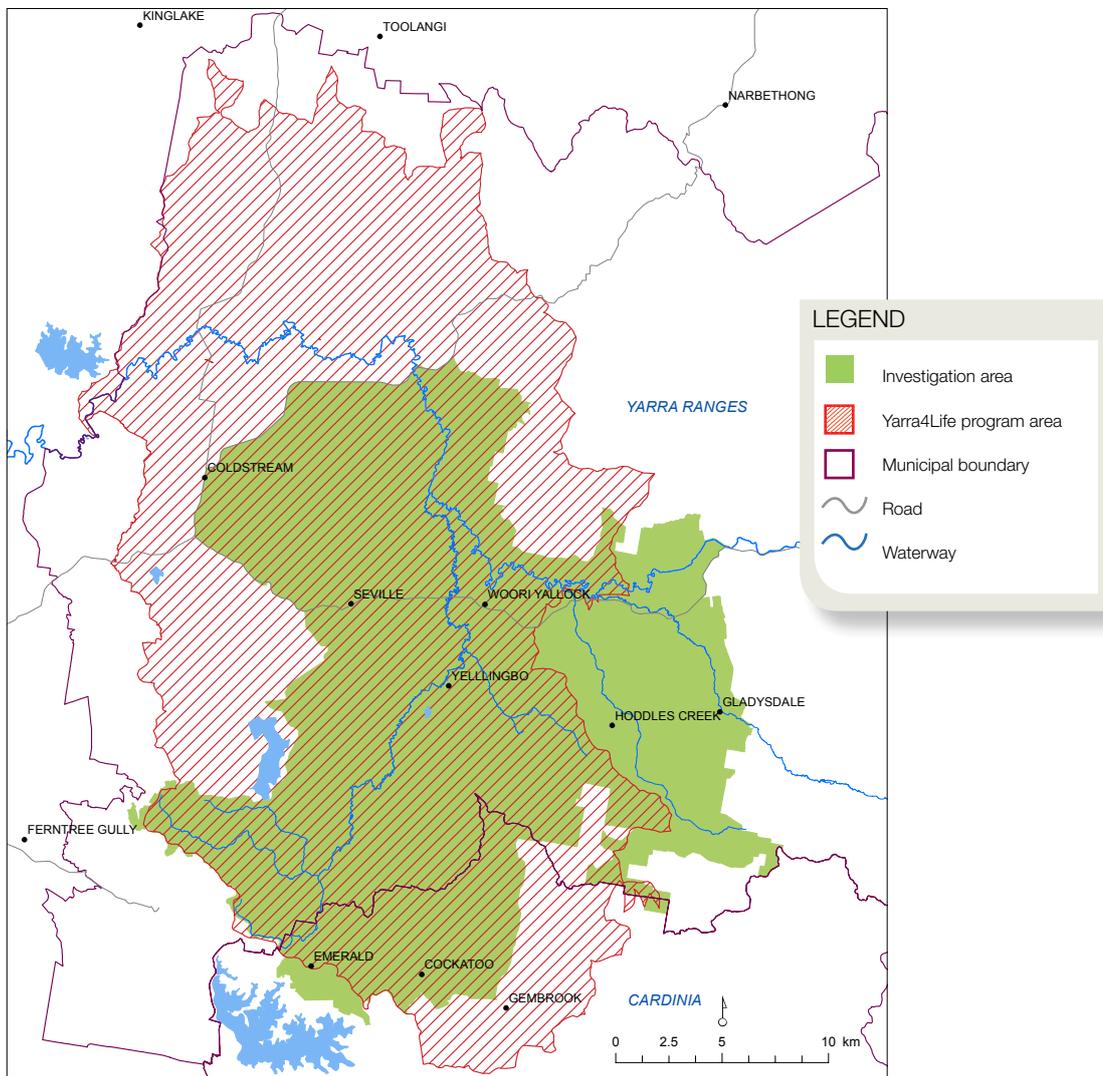
Established in 2006, the Yarra4Life program is a collaborative multi-agency program focused on achieving environmental, agricultural and tourism improvements in the southern part of the Yarra River Catchment between Lilydale, Gembrook and Woori Yallock (figure 4.1). A Coordination Committee of eight partner organisations operates the program facilitated by the Port Phillip and Westernport CMA. It is one of four major environmental projects in different parts of the CMA's region where it strategically focuses its work. Yarra4Life partners include, for example, the Friends of the Helmeted Honeyeater, local Landcare groups, Yarra Ranges Council, Melbourne Water and Parks Victoria. The program is funded by a range of government and community grants as well as business and philanthropic sponsorship and donations.

Yarra4Life works through projects that support landholders and groups towards its overall objective of creating biolinks between Yellingbo Nature Conservation Reserve and nearby parks so that wildlife species, including the helmeted honeyeater and Leadbeater's possum, can extend their populations. The program coordinator provides an important contact point for landholders seeking funding for environmental land management improvements, and businesses looking to invest in environmental projects including those providing carbon offsets and tax deductions. In priority areas, grants are available to landholders for fencing around patches of native vegetation, pest plant and animal control, or revegetation to improve the extent and condition of habitat for the key threatened species.

As an indication of the scope and extent of its work, in 2011-12 Yarra4Life was able to attract and direct well over half a million dollars and thousands of hours of volunteer labour to deliver:

- ✦ training in pest plant or animal management and farm chemical use for 154 landowners
- ✦ fencing and other works to protect some 85 hectares of remnant habitat
- ✦ 120 hectares of pest plant or animal management and nearly 24 hectares of revegetation with nearly 15,000 plants established over 15 planting days.

Figure 4.1
Yarra4Life project area



DSE Crown land stream frontages

DSE has almost completed an initiative to terminate licences on Crown land frontages along about 2.5 kilometres of Shepherd Creek near Nangana. This stream is located in the catchment immediately upstream of the environmentally sensitive area of Cockatoo Swamp and has a high strategic value for ongoing management of the hydrological processes in Yellingbo Nature Conservation Reserve. Altered hydrology is strongly implicated in the die-back of the Sedge-rich *Eucalyptus camphora* Swamp vegetation in the swamp and the coincident decline in helmeted honeyeater and Leadbeater's possum populations there. The stream frontage here is significant also because it is the largest strip of remnant native vegetation in the cleared land that separates the large blocks of native vegetation in the nature

conservation reserve and Kurth Kiln Regional Park to the east. Because this is the shortest distance between the nature conservation reserve and another large block of native vegetation, this area has been a particular focus for several other efforts especially those with a habitat connectivity emphasis such as Yarra4Life. The area has been called the 'missing link' by local environment groups, as has the Woori Yallock Creek frontage between the Yellingbo and Sassafras Creek Nature Conservation Reserves (see Protected area establishment and management later in this chapter).

Judith Eardley Save Wildlife Association

The Judith Eardley Save Wildlife Association (JESWA) Inc was established in 2000 to raise funds to help save wildlife. The association undertakes fundraising focused on a volunteer-operated charity shop in Healesville and internet book sales. By 2007 more than \$750,000 had been raised.

In 2005 the JESWA fund provided more than \$300,000 to purchase the 20 hectare 'Silvan reserve' and 3.2 hectares adjoining Yellingbo Nature Conservation Reserve. In 2010-11 JESWA donated \$100,000 to Yarra4Life towards establishing a vegetated biolink—known as 'the missing link'—between Yellingbo Nature Conservation Reserve and Kurth Kiln Regional Park.

Management by local government

Although not public land as defined in the VEAC Act, local councils often own land that is primarily managed for conservation purposes and reasonably large blocks of land that support native vegetation. These places may form important linkages between larger public land blocks. Often they are thought of as 'conservation' reserves but for the most part there is no formal mechanism or other effective measure to ensure that biodiversity conservation is the highest priority management purpose.

To address this vulnerability Yarra Ranges Council has recently covenanted several council-owned reserves using Trust for Nature conservation covenants. Some 18 hectares of high conservation significance vegetation at Butterfield Reserve near Emerald has been covenanted and will be managed for conservation purposes. This site abuts Sassafras Creek Nature Conservation Reserve. Parts of the reserve that are currently used as a bridle trail and those areas requiring intensive fire protection treatments have been excluded from the covenant area. Informal walking tracks will remain open to the public; however dogs and horses will not be permitted in the covenant area in keeping with the conservation objectives.

Under Cardinia Shire Council's Biodiversity Incentive Scheme landholders with Trust for Nature conservation covenants are eligible for cash incentives. In 2011-12, the amount available to each landholder was \$30 per hectare up to a maximum of \$500.

Roadside management

In the Yellingbo investigation area, more land is set aside for road transport (formally Service and utilities – roads) than any other public land use category, although in many road reserves no road has actually been built (see section 3.3 and table 3.2). Outside the central paved road surface, roadsides deliver a range of uses including traffic safety, landscape amenity, recreation trails, fire management, conservation of natural values, and the provision of utilities. Roadside slashing and maintenance is undertaken according to the values present and the criteria for both road safety and fire risk. Maintenance programs depend on location, vegetation significance and the adjoining land use. Road management agencies such as VicRoads and local government undertake investigation and documentation of roadside values and include this information in decision-making.

Detailed mapping of native vegetation, weeds and some other features has been undertaken across much of the investigation area. As the planning authority, local government is often responsible for decisions relating to native vegetation and biodiversity values more generally including those along roadsides. For example in 2007 Cardinia Shire Council established a program targeting ragwort, blackberry and sweet pittosporum on Council-managed roadsides within one kilometre of four townships in or adjoining the investigation area—including Cockatoo, Gembrook, and Emerald. This program has been expanded (Six Towns Weed Control Project) with additional support from DPI through a 'Future Farming Initiative – Building Capacity for Local Government to Respond to Pests' grant.

Similarly, Yarra Ranges Council has assessed and mapped roadside native vegetation according to its conservation significance and this information is taken into consideration in planning and works in a broad range of contexts such as pest plant and animal control, revegetation, biodiversity conservation and habitat connectivity, recreational use, fire management in addition to road and traffic management.

Yarra Ranges Council Weed Wipeout

Yarra Ranges Council runs an ongoing weed removal program called Weed Wipeout, to help residents remove and dispose of weeds on their property. Weed Wipeout targets English ivy, agapanthus, Japanese honeysuckle, montbertia, wandering trad, wild tobacco tree, blue periwinkle and arum lily. Land owners can contact the council to be mailed a free information pack and voucher that entitles the registered applicant to disposal of one trailer load (or one cubic metre) of weeds at various transfer stations.

Yarra Ranges Council Ribbons of Green program

The Ribbons of Green program was developed to encourage the use of indigenous plants in general landscaping around buildings and to help offset carbon emissions produced by council's vehicle fleet. The council provides free plants each year to private landowners, schools and community groups looking to create bush habitats with a minimum of 300 plants (100 of which must be trees and 200 understorey plants). Plant guards, weed mats and stakes are also available as well as information on how to prepare the site, control weeds and select appropriate plants. There is no minimum number of plants for schools.

Urban Fringe Weed Management Initiative – Dandenong Ranges

This co-operative interagency program includes Yarra Ranges Council, Parks Victoria, DSE, Melbourne Water and VicRoads, and focuses on weed management in the Dandenong Ranges. The State government has committed \$4 million over 4 years from July 2010 to be spent on weed removal in the Dandenong Ranges National Park for this program. This funding is being matched by complementary local council works on reserves and roadsides surrounding the parks.

Interagency weeds forum

In recent years Yarra Ranges Council has led a major drive to reduce the pest plant threat on strategic public or municipal land areas. Other participating organisations include Parks Victoria, Melbourne Water, Port Phillip and Westernport Catchment Management Authority and VicRoads. As well as securing and allocating funding, officers of the council have set up a relatively informal interagency weeds forum that meets at least annually to exchange information and, as far as possible, align priorities and coordinate works. Weed management is a good example of the benefits of such cooperation—control measures are often much less effective or even totally ineffective if they reduce weeds in one place but do not address re-invasion from nearby land.

The forum has been successful at improving the effectiveness of weed management for little additional effort. However, like many such initiatives the informality of the forum is both a strength and a weakness—it makes the establishment and operation of the forum relatively straightforward but in the absence of formal state government support, is vulnerable to fluctuations in resourcing and personnel. This risk is increased by the short-term nature of much of the funding for weed control.



Protected area establishment and management

Across Victoria, public land areas with the highest natural values are typically designated as national or state parks or nature conservation reserves (including flora reserves and flora or fauna reserves). Nature conservation reserves may be only a few hectares in size, unlike national and state parks, but often contain populations of extremely rare species. Public recreation, education and other uses are considered secondary and permitted only where these activities are compatible with biodiversity conservation. Organised and active recreational activities are largely excluded from nature conservation reserves. Other conservation areas, such as natural features reserves – bushland areas, can accommodate a wider range of secondary uses and recreational activities such as horse riding may be permitted.

In the Yellingbo investigation area, nature conservation reserves form the majority of the protected areas and provide the highest level of protection for natural values.

As shown in box 4.2, which documents the history of the Yellingbo Nature Conservation Reserve, the establishment and management of protected areas has been a major focus for a long period of time in the investigation area. Now, despite being highly fragmented and extensively committed to a range of uses, more than a quarter of the public land in the investigation area is in conservation reserves.

Trust for Nature

As noted in chapter 3, the Trust for Nature is a Victorian statutory authority that predominantly works to voluntarily secure private land to be managed for nature conservation. Foremost among the ways it does this is by working with willing landholders to have a conservation covenant permanently attached to the property title of suitable parcels of land with native vegetation. Covenant conditions vary but typically they specify that the native vegetation is not to be removed and is to be managed in a way that maintains or enhances its biodiversity. These conditions continue to apply when the property is sold to another owner.

Another key activity of the Trust is the purchase of properties with native vegetation in order to protect that vegetation by either attaching a covenant to the title and then on-selling the property, retaining the property in Trust ownership and managing directly for nature conservation, or transferring it to the government for it to manage the land appropriately, usually as an addition to or together with a nearby existing public land protected area.

Not surprisingly, given its abundance of significant but threatened natural values and strong community support, the Yellingbo investigation area has been a region of great

activity for Trust for Nature since the organisation was established in 1972. Recent analyse undertaken by Trust for Nature as part of its Statewide Conservation Plan have furthermore identified the investigation area as part of one of the thirteen focal landscapes identified for priority conservation on private land across the State. As a result of this long-term recognition of the biodiversity values on private land in the area, the Trust has supported land purchase for conservation there. The Trust currently manages two of its own properties at Emerald (4.2 hectares) and Wanderslore near Launching Place (10 hectares), administers 14 property covenants covering a total of 125 hectares and has played a major role in the creation of the Yellingbo Nature Conservation Reserve (see box 4.2).

Landcare

Landcare is a long-running program focused on reversing the degradation of farmland, public land and waterways with a core vision aimed at caring for the land. Today there are more than 6000 Landcare and Coastcare groups nationwide and several across the Yellingbo investigation area. Many urban municipalities operate an affiliated Bushcare program.

Landcare is community owned and driven, with groups formed around a common interest in a local land management issue. The central aims encourage integrated management of environmental assets with productive farmland and a sustainable approach to private land management. Groups such as the Yarra Valley Equestrian Landcare Group (founded in 2011) focus on achieving a specific goal: healthy land for healthy horses. Already this group has around 50 members. Uniquely placed, this thematic-based Landcare group provides an important educational resource both for people moving into the areas with little land management experience, and for those horse owners who would like to become more informed or improve their practices. In a region where horse ownership is very high, access to best practice land management skills or advice is very important for many small properties owners. Similarly, Monbulk Landcare Group was established in early 2010 and focuses on improving habitat for native birds and animals on stream frontages encompassing both public and private land. This group protects existing habitat through removing environmental weeds, encouraging regeneration and in some places re-vegetating land with the assistance of grants available from a range of organisations.

Friends groups

In the 40 years since the first environmental friends group in Victoria was established (Friends of Organ Pipes National Park), more than 300 community groups have been set up across the state to help conserve areas, specific reserves, particular native species or other features of natural, cultural or scientific interest. The groups work with government natural resource managers by, for example, assisting with appropriate management activities such as weed control and revegetation, biodiversity surveys and assessments, input to management planning, advocacy, and building community profile and support. Most groups have set up in response to a particular shared need and the groups vary greatly in terms of size, formality, geographic coverage and activity.

This variation is also apparent in the investigation area where the numerous Friends groups reflect the high general level of community engagement with the local environment. Some groups focus on relatively small specific areas, such as the Friends of the Old Gippsland Road, while others cover whole landscapes, such as the Friends of Hoddles Creek. In addition, for species such as Leadbeater's possum and platypus that occur well beyond the investigation area there are Friends groups with varying levels of focus within the investigation area.

A prominent group in the investigation area is the Friends of the Helmeted Honeyeater. Since it was established in 1989, this group has played a very active role in conservation of this endangered bird. Volunteers undertake a range of activities including bird surveys, supplementary feeding and planting days. The Friends group has adopted a community education role, providing talks, activities and written materials to raise public awareness. In 1991 the group set up a nursery at Yellingbo Nature Conservation Reserve to propagate indigenous species for revegetation work and to sell to the public. Currently, the nursery turns over approximately 80,000 tube stock annually.

Port Phillip and Westernport Catchment Management Authority community grants

In addition to Yarra4Life and its core work in the coordination, administration and delivery of environmental funding from the Commonwealth's Caring for our Country program and the State government's Victorian Investment Framework, Port Phillip and Westernport CMA also provides modest grants to community groups and volunteer-based organisations to improve the health of the environment. Three types of grants were offered in the 2011-12 financial year:

- ✦ Grants of up to \$20,000 for projects contributing to specified priorities such as ecosystem services, landscape connectivity and ecological resilience
- ✦ 25th Anniversary of Landcare Grants – \$1000 to \$5000 for small projects
- ✦ Smaller start-up and support grants available to assist only incorporated Landcare groups or networks working on private land.

In 2011-12, 68 grants with a total value of \$392,794 were allocated across the CMA region, although only four of those with a total value of \$25,000 were in the Yellingbo investigation area.



Threatened species and communities conservation

The last wild helmeted honeyeater population and the endangered Sedge-rich *Eucalyptus camphora* Swamp Community are both confined to the Yellingbo Nature Conservation Reserve. Management of these threatened species and communities is entirely dependent upon management of the reserve, unlike other relatively more widespread threatened species such as the Leadbeater's possum and swamp skink.

Throughout the 1970s management of the Yellingbo Nature Conservation Reserve focused on securing additional areas of helmeted honeyeater habitat by purchasing suitable freehold land to expand the reserve, and revegetation activities largely coordinated by an energetic Friends group. The first national recovery plan prepared for the helmeted honeyeater in 1991 set a range of management objectives and established the operation and program of a coordinating body known as the 'recovery team'. Focus shifted from land and habitat management to management of the individual requirements of the birds. At around this time in May 1989 there was an estimated 39 adults and 14 immature birds in the wild with an additional 13 immature birds at Healesville Sanctuary.

The third and current national helmeted honeyeater recovery program³⁷ continues to set key management actions designed to achieve the overall long-term objective of:

establishing a stable population of at least 1000 individuals, in at least 10 separate but interconnected colonies, dispersed along several creek systems in the mid-Yarra and Western Port catchments.

Strategies employed focus on population genetics and habitat management. More detailed specific objectives with a series of actions and performance measures are described to document progress towards the long-term goal. The specific objectives are to:

- 1 increase the number and size of wild populations to at least 200 mature individuals
- 2 maintain and enhance the value of helmeted honeyeater habitat in Yellingbo Nature Conservation Reserve, Bunyip State Park, and elsewhere throughout the former range
- 3 improve the management of stream flows, water quality and riparian environments throughout the Woori Yallock Creek catchment
- 4 manage the captive population of helmeted honeyeaters to provide insurance against the demise of the wild population and to meet the needs of the recovery program
- 5 maintain the genetic diversity and evolutionary potential of the helmeted honeyeater
- 6 improve public awareness of the helmeted honeyeater recovery program and public support for implementation of this recovery plan
- 7 effectively administer the recovery effort to ensure that recovery plan objectives are met.

The main threats identified in this plan are related to the pervasive environmental pressures from surrounding land use on the habitat of the helmeted honeyeater and in particular the threat of a natural disaster such as bushfire, flood and drought. Specific threats confined to the small wild population include high mortality of captive breed birds released into the wild, inbreeding and competition for habitat by more aggressive species such as bell miner.



• Emerald star-bush

Biodiversity Action Planning

The Biodiversity Action Plan (BAP) program utilises a structured and strategic approach to plan future landscapes. Significant areas for biodiversity conservation are identified at landscape or bioregional scales, and future actions focus on opportunities to conserve groups of species in appropriate ecosystems. BAPs provide practical assistance to land managers to identify and prioritise the protection of biodiversity values in the face of a high level of complexity. This includes social and economic values as well as natural diversity and technical biodiversity conservation information.

Biodiversity action planning aims to conserve a viable example of biodiversity of ecosystems that occur naturally in Victoria, while promoting protection, restoration and ongoing management of priority sites, and achieve community support.³⁸ This voluntary program provides an opportunity to establish partnerships between biodiversity and land managers including DSE, CMAs, Trust for Nature, local government, Parks Victoria and the community.

Biodiversity action planning is supported by a methodology and framework that includes:

- ✦ a bioregional strategic overview
- ✦ landscape plans
- ✦ local area plans
- ✦ mechanisms to engage landholders and the community.

This planning approach is based on the application of scientific principles for landscape-scale conservation of biodiversity. The bioregional conservation status of EVCs and threatened species provide important data used to identify assets and assist with prioritising future management actions.

BAPs may also inform regional catchment strategies, local government policy and planning, and Trust for Nature's conservation planning. The program has an important role linking broad landscape-scale strategies with local on-ground actions. These plans supports the notion of a 'net gain' in the extent and quality of native vegetation as outlined in Victoria's Native Vegetation Management Framework (see section 4.3).

The investigation area is part of the Highlands-Southern Fall bioregion which has been divided into eight zones: plans have been prepared for the Gembrook and Yarra zones.^{39, 40} At a more detailed level Woori Yallock Creek Sub-catchment Biodiversity Local Area Plan: Conserving the natural habitat⁵ focuses on the area surrounding Yellingbo containing high value biodiversity assets.

Zoos Victoria's 'Fighting Extinction' program

In transforming itself into a zoo-based conservation organisation, Zoos Victoria (ZV) has recently reviewed and refocused its threatened species recovery program under the banner 'Fighting Extinction'. At the core of the program is a commitment to ensure that no Victorian species of terrestrial vertebrate becomes extinct. To fulfil this commitment, ZV has identified 20 priority native species at threat of extinction over the next 10 years. Both the helmeted honeyeater and the genetically distinct lowland population of Leadbeater's possum at Yellingbo are on ZV's Fighting Extinction list of priority threatened species. As a result, both are part of captive-breeding programs at Healesville Sanctuary. The Fighting Extinction strategy represents a more structured, systematic and integrated approach to how ZV is attempting to deliver tangible conservation outcomes. Measures of success are tied to the condition of wild populations. Specific 5-year and 20-year recovery targets have been developed for each species in the wild and captivity, to better integrate wild and captive-based recovery actions.

Zoos Victoria is leading or collaborating in more than 50 research projects, several of which are focused on improving components of threatened species recovery. This research is endeavouring to link captive and wild populations through the regular transfer of individual animals (to enhance genetic diversity), and has placed greater importance on the quality of individuals bred in captivity. The latter has become a major research focus.

As part of the Fighting Extinction program, ZV also has a major campaign called 'Love Your Locals' to raise the community profile of local threatened species. This campaign addresses specific visitor objectives to sit alongside captive-breeding targets in threatened species recovery programs. It applies aspects of the Connect-Understand-Act model developed to promote behaviour change in the community to enhance wildlife conservation.

Catering for biodiversity in the day-to-day management of public land

In addition to the examples of land management with a strong emphasis on biodiversity highlighted in this chapter, consideration for biodiversity conservation is routinely embedded in the management of public land. This extends beyond the protected area estate to places such as the Puffing Billy railway line, the Lilydale-Warburton rail trail and many other reserves. It also extends beyond activities such as fire or pest management detailed elsewhere in this chapter to encompass the full range of activities, provisions and planning associated with public land management, e.g. infrastructure location, recreational opportunities, revegetation, and the presentation of publicity and interpretive material.

Victoria is the most cleared state in Australia, and native vegetation continues to be degraded and lost. Measures to reduce the broad-scale degradation were introduced in the 1980s and the current native vegetation framework was introduced in 2002. These and other statewide conservation programs are described below.

Native vegetation retention and the Native Vegetation Framework

Native Vegetation Management: A Framework for action (the Framework) was released in 2002 and is the primary planning tool used in Victoria to protect, enhance and re-establish native vegetation.

The rules governing the removal of native vegetation in Victoria sit within Victoria's planning system. These rules are known as the 'permitted clearing regulations'. The Framework is incorporated into Victoria's planning schemes to inform the application of the permitted clearing regulations.

In September 2012 the government released a consultation paper reviewing Victoria's native vegetation permitted clearing regulations.⁴¹ The two matters at the centre of the review are the objective of the permitted clearing regulations, and the efficiency and effectiveness of the permitted clearing regulations in achieving this objective.

Green Wedges, the Urban Growth Boundary and statutory planning

Around Melbourne's urban fringe specific 'green wedge' planning protection has been established to retain traditional rural landscapes such as farming, recreation, nature reserves and state forests. Initially established in the 1960s, Melbourne's twelve green wedges form a non-urban area surrounding the city. The Yellingbo investigation area is substantially within the Yarra Valley and Yarra and Dandenong Ranges Green Wedge (figure 2.5) which is partly within the municipality of Yarra Ranges (237,000 hectares) and partly within Cardinia Shire (120,000 hectares).

In these areas, local councils prepare, in partnership with the community and government, a Green Wedge Management Plan to identify the values, features and assets (environmental, social and economic) of a green wedge area. The plan identifies a strategic direction for land use, development and land management to ensure pressure from urban expansion does not degrade non-urban landscapes.

In addition to the planning provisions of the green wedge zones, the Urban Growth Boundary (UGB) restricts urban-related development and provides certainty for land use decisions to both the community and investors. Land within the UGB is available for urban development such

as housing and industry. Several major townships in the investigation area are within small UGB envelopes where urban development is focused.

Biodiversity conservation is also a significant consideration in Victoria's extensive and detailed statutory planning system. Under this system planning zones and overlays are identified in planning schemes, with various provisions applying in different zones such as allowable minimum subdivision size. Many such provisions are intended to maintain natural values and character, including biodiversity, particularly in Environmental Significance Overlays. As with Green Wedges and the Urban Growth Boundary, the contribution of planning provisions to biodiversity conservation is largely on private land.

Market-based incentives

Market-based incentives operate in targeted high priority areas, with vegetation being protected through improved management and a vegetation credit or offset. These programs generally function as auction-based or competitive tender schemes focused on native vegetation protection over and above what is already required by legislation. Examples include EcoTender, BushBroker, BushTender, and CarbonTender.

Victoria's biodiversity strategy, Actions for Biodiversity Conservation, NaturePrint

In Victoria the primary legislation governing biodiversity conservation and sustainable use of native flora and fauna is the *Flora and Fauna Guarantee Act 1988*. This Act establishes the Victoria's Biodiversity Strategy (originally called the Flora and Fauna Guarantee Strategy) to set out how biodiversity conservation and management objectives are to be achieved. It includes proposals for the survival, abundance and evolutionary development in the wild of all species and communities, ensuring the proper management of potentially threatening processes, and an education program aimed at improving the ability of all relevant people to achieve conservation and management objectives. The strategy has regard to the need for efficiency and effectiveness and to achieve these objectives with minimum adverse social and economic impact and to the rights and interests of landholders. It complements regional strategies, Regional Forest Agreements, national parks and reserves planning and the national Biodiversity Conservation Strategy.

The *Flora and Fauna Guarantee Act 1988* also provides a process for listing threatened species or communities and potentially threatening processes. Action Statements are prepared for listed species, communities and processes and the resulting actions and outcomes are monitored through the ABC information system.

The Actions for Biodiversity Conservation (ABC) is DSE's information system holding knowledge of Victoria's

threatened species and communities. More than 400 species and communities and over 14,000 management actions at approximately 2000 locations across Victoria are currently stored. The system is used to track the progress of management actions documented in Action Statements prepared under the *Flora and Fauna Guarantee Act 1988* and in Recovery Plans under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. This information system can be interrogated to help determine management effectiveness and conservation trends.

DSE has recently developed a new landscape-scale conservation planning tool known as NaturePrint. This tool integrates complex biodiversity values, threatening processes and ecosystem function at the landscape scale and provides a simple to use visual output. Information combined includes species distribution modelling, habitat and vegetation condition, landscape connectivity and potential to recover from disturbance or resilience. External factors such as social and economic information will influence the final decisions, including feasibility, cost, resources, and land tenure, but NaturePrint provides a readily accessible tool to consider multiple biodiversity requirements simultaneously. The model can also produce 'fit for purposes' analysis to prioritise management actions or identify species distribution for more targeted survey work.

Land for Wildlife

Land for Wildlife celebrated its 30th anniversary in 2012. This highly successful voluntary scheme encourages and assists private landholders to manage their property for biodiversity through both practical actions such as protecting native vegetation by fencing to exclude stock, protecting dead trees with hollows, and education, advice, technical support and training. Across Victoria today more than 560,000 hectares of private land is managed to protect native wildlife habitat, even though the property may be managed primarily for other purposes.

Victorian government Communities for Nature grants

In 2011 the Government announced a new four-year statewide \$20 million competitive and targeted grants program to support community groups and organisations, including schools, to conduct work to protect and enhance their local environment. The program provides grants for practical community action in the environment, to foster greater enjoyment of the natural environment and create visible and lasting improvement. The grants are focused towards biodiversity and habitat preservation, threatened species recovery, revegetation, and control of weeds and pest animals.

In the first round of grants around \$850,000 was allocated to five groups (for up to four years) in the Yellingbo investigation area for activities such as production of a trackside management plan for the Puffing Billy railway line and habitat enhancement for Leadbeater's possum.

Good Neighbour program

The Good Neighbour program aims to control weeds and pests on the boundary between public and private land. Good Neighbour regional coordinators develop projects based on information provided by land holders and according to specified criteria or priorities. Government, farmers and the community can more effectively protect the environment and help stop pests and weeds by working together. The program is administered by DSE and incorporates activities on public land managed by DSE and Parks Victoria. In 2010-11, \$2.3 million supported almost 400 weed and pest control projects on public land across Victoria. Projects in the Port Phillip and Westernport CMA region, including some in the investigation area, received some \$283,500 targeting blackberry, gorse, boxthorn, ragwort, St John's wort, St Peter's wort, Paterson's curse, Japanese honeysuckle, Chilean needle grass, cape tulip, serrated tussock, foxes, rabbits and wild dogs.

Fire management

Fire shaped our landscape and continues to be an important factor affecting the distribution and occurrence of many plants and animals. Ecosystems and species have differing tolerances for fire. 'Inappropriate fire regimes' is listed as a potentially threatening process under the *Flora and Fauna Guarantee Act 1988*. Ecological information is factored into the complex decisions made by fire agencies regarding prescribed burns for reduction of wildfire hazard. The recently revised *Code of Practice for Bushfire Management on Public Land*¹⁹ establishes four Fire Management Zones, each prescribing a primary fuel treatment aim. Considerations for zone placement include risk to human life, practical and achievable burning outcomes, fire regimes appropriate for specific vegetation types or ecological values, overall fuel hazard ratings and likely bushfire behaviour. These four zones and their management objectives are:

Asset Protection Zone

- intensive fuel treatment provides the highest level of localised protection to human life, property and assets. The goal is to reduce radiant heat and ember attack through planned burning and other methods such as mowing, slashing or vegetation removal.

Bushfire Moderation Zone

- to reduce the speed and intensity of bushfires and protect nearby assets, particularly from ember spotting during a bushfire. Ecological outcomes

can be achieved through ecologically desirable fire regimes and includes other fuel management methods.

Landscape Management Zone

- planned burning here has three broad aims:
 - reduce the overall fuel and bushfire hazard
 - maintain ecological resilience through appropriate fire regimes
 - manage for values including forest regeneration and protection of water catchments.

Planned Burning Exclusion Zone

- excludes the use of planned burning primarily in areas intolerant to fire.

More than 85 per cent of vegetated public land in the investigation area is allocated to planned burn exclusion zone for fire management purposes. The recently released DSE Fire Operations Plan – Port Phillip Region identifies planned burns for the next three years at Wright Forest and Beenak bushland reserves, Warramate Hills Nature Conservation Reserve, and a small area of Hoddles Creek Education Area.⁴²

Ecological burns, conducted for environmental outcomes, can also provide fire hazard reduction in some circumstances. Fire sensitivity of threatened species at Yellingbo Nature Conservation Reserve is a major concern for species recovery teams, particularly given the precarious nature of these isolated remnant populations. Catastrophic wildfire, such as the Black Saturday fires of 2009, threatened the survival of not only the wild populations of helmeted honeyeater and lowland Leadbeater's possum at Yellingbo, but also those in captive breeding programs at Healesville Sanctuary.

From an ecological perspective, lowland Leadbeater's possum is dependent on large-old hollow-bearing trees for nesting locations, and therefore a long fire interval is required to allow trees to senesce and provide nesting sites. Conversely, more frequent low intensity fires rejuvenates understory vegetation providing additional food sources and important habitat structure. Understanding the role of fire in Cockatoo Swamp has been identified as a key research objective to support threatened species at this site. However there are physical constraints here such as the risk of fire spreading onto adjoining private land and a high edge effect to manage upon recovery.

Weed and pest animal initiatives

Weeds, pest animals and diseases threaten native biodiversity as well as social and economic assets. Weeds alone are estimated to cost the Victorian economy over \$900 million each year, and 30 per cent of Victoria's flora is now naturalised non-native species.

All landholders have responsibilities for invasive plant and animal management under the *Catchment and Land Protection Act 1994*. This Act provides for the identification of certain species as noxious weeds or pest animals and declaration of these in a number of categories. Landowners are required to take all reasonable steps to eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds and prevent the spread or eradicate pest animals. Catchment management authorities and local government play an important role in identification and control of pest plants and animals.

The Department of Primary Industries is the policy and research agency responsible for invasive plants and animals. On public land, DSE and Parks Victoria have adopted a biosecurity approach focused on preventing new infestations and mitigating the impacts of established species.⁴³ While investment is generally much higher on land managed by Parks Victoria than on other public land, it is difficult to quantify works and investment in the investigation area because all effective pest control programs take a regional, often coordinated approach (e.g. see 'Interagency weeds forum', earlier in this chapter) and cross administrative boundaries such as the Yellingbo investigation area boundary. Both municipalities in the investigation area have developed weed management strategies.^{44, 45}

In any event, the control of pest plant and animals remains an expensive and difficult problem to overcome and only rarely is significant, sustained progress apparent. Persistence is essential to avoid years of successful work suppressing pests to the advantage of native species being wasted when a program lapses.

History of the Yellingbo Nature Conservation Reserve

In the early 1950s the Royal Australasian Ornithologists Union and the Bird Observers Club (now merged as Birdlife Australia) first brought attention to the plight of the helmeted honeyeater. By this time there were estimated to be some 200 birds remaining in the wild. The groups argued that the decline in bird numbers was due to the destruction of native vegetation on mostly licensed Crown land frontages. They wrote to the Minister for Lands requesting that habitat in the catchments of Woori Yallock and Cardinia creeks 'be preserved free from licensing as a permanent reservation for the conservation of the helmeted honeyeater'.

In 1953 *Survey Cassidix* was organised by the Bird Observers Club. The data subsequently collected clearly revealed continuing decline in bird numbers. Public attention focused on the destruction of riparian vegetation, and the support of organisations such as National Trust of Australia (Victoria) eventually provided enough evidence to persuade the government to take action. In 1962 several organisations offered to be appointed as a committee of management over the areas of suitable helmeted honeyeater habitat remaining in the Woori Yallock Creek catchment. By this time the Cardinia Creek population was believed to be extinct, further elevating the importance of the Woori Yallock Creek colony. In February 1965, Premier Sir Henry Bolte acted to proclaim certain creek frontages in the Yellingbo area as a wildlife reserve for the conservation of the helmeted honeyeater and other species (figure 4.2). Later that year some 108 hectares of riparian land along Cockatoo Creek and Sheep Station Creek was reserved for public purposes (conservation of wildlife).

Expansion of the original reserve since that time has been by inclusion of both additional Crown land areas and about 70 new land acquisitions, mostly in the late 1970s. These additions comprise approximately 250 hectares as land purchase, compulsory acquisition and donation to the Crown. In its 1977 Melbourne Study Area Final Recommendations, the LCC recommended additions to the existing wildlife reserve to a total of some 160 hectares including the first section of Woori Yallock Creek frontage and an extension of the area along Sheep Station Creek. The most substantial individual acquisitions result from long-term (sometimes intergenerational) negotiations, mostly undertaken by Trust for Nature, for substantial areas containing

remnant vegetation and specifically swamp habitats. For example, some 178 hectares including most of Cockatoo Swamp was purchased in 1995 by Trust for Nature and included in management planning for the Yellingbo Nature Conservation Reserve. In 2006 Trust for Nature transferred this land to the Crown leading to the most substantial single addition to the reserve since its establishment in 1965.

Today an active Friends group assists Parks Victoria with community engagement and education, and land management activities. The Friends of Helmeted Honeyeater are part of the multi-agency recovery program and have dedicated thousands of hours to the specific management of this threatened species. They focus on revegetation and operate a community nursery propagating indigenous plants for re-vegetation projects and planting days throughout the reserve and across the catchment more broadly. Between 2007 and 2010 it is estimated that more than 22,600 hours of in-kind work has been undertaken by this friends group.

Figure 4.2

1965 letter from the Premier of Victoria to the Minister for Lands approving the establishment of a wildlife reserve for the conservation of the helmeted honeyeater



5 Draft recommendations



Public land across the Yellingbo investigation area is fragmented and configured in a way that is inhospitable to biodiversity and disruptive to ecological connectivity. Despite the fragmentation and low proportion of public land, some parts of the investigation area retain nationally significant biodiversity values as outlined in the preceding chapters. Some of these values are robust or resilient, while others are sensitive to even minor changes.

Public land plays a vital role in meeting objectives that operate across broader landscapes and are important to the entire community. Not all public land can provide for all activities or uses but, in aggregate, public land is expected to provide for the range of uses at least at some locations. In the Yellingbo investigation area most land is strongly committed to an existing use, and therefore there is little flexibility to include additional activities on existing sites.

Nature conservation is a key focus of the terms of reference for this investigation and VEAC has been asked to identify ways of reducing the threats and enhancing the biodiversity and ecological values. It is the task of Council to make recommendations to address threats or issues that apply across public land, as well as recommendations to enhance biodiversity values. Addition of land to conservation categories is one of the main mechanisms for achieving biodiversity protection. However, the threats to natural values in this landscape are complex, and inherently difficult for any one land manager to resolve. Given the highly significant values present in this area, VEAC has looked for new ways to improve management for conservation purposes in addition to including areas of high natural or connectivity value in protected areas.

Presented on the following pages are draft general recommendations that apply to the entire investigation area or very large parts of it, prefixed R (sections 5.1 and 5.2). Draft recommendations for specific public land use categories, prefixed A to F (sections 5.3 to 5.8), follow and are shown on map D.

This investigation was initiated largely in response to the difficulties experienced by both land managers and volunteers in managing fragmented landscapes with highly significant conservation values. A high level of administrative or public land complexity also confounds resolution of on-ground management issues. The draft recommendations presented here propose a new model for land management that seeks to enhance the contribution made currently by multiple land managers, through a coordinated approach of shared responsibility. Having all the relevant land managers on a management committee can greatly improve results by pooling the wealth of experience and resources available to each, making a whole that is more than the sum of its parts.

The issue of under-resourcing of public land management has been consistently raised in all forms of community consultation. However, merely doing more of what is currently being done is unlikely to improve the overall outcome for Yellingbo's key iconic threatened species and other natural values. In summary, implementing VEAC's recommendations will require some initial resourcing which Council believes will be more than recouped as the implementation takes effect. This does not imply that Council believes current levels of ongoing resourcing could or should be reduced.

Land management activities other than nature conservation also require adequate resourcing. The 2009 Victorian Bushfires Royal Commission acknowledged that a greater level of land management is required to respond to an increasing threat of wildfire, particularly in peri-urban areas. For public land managers to appropriately contain the threat, greater fire suppression and preparedness is required, but this is to be achieved with largely the same level of resourcing. For the reasons described above, VEAC recommends additional resources be allocated to establish the recommended land management changes described here, for operation into the future and to deliver meaningful conservation and enhancement of biodiversity and ecological values.

The large number of existing policies, programs and grant schemes for stream frontages reflects the prominence of these areas for biodiversity conservation. However, in administrative terms stream frontages can be problematic with waterways changing course and the public-private land boundary often requiring re-survey. Boundary survey is seldom undertaken outside of conservation areas such as national parks because of the expense, the time required and the difficulty of negotiating land exchange should the stream have migrated outside the established Crown reserve.

VEAC is proposing that survey of stream frontages be given high priority to assist the implementation of recommendations and provide clarity for land managers and other stakeholders.

DRAFT GENERAL RECOMMENDATIONS

Implementation resources

R1

Government allocates adequate financial and staff resources for implementation of these recommendations and ensures that the objectives of the report and recommendations are achieved.

Resources for ongoing land management

R2

Government allocates additional resources to address current and future public land management needs in the investigation area, with priority given to biodiversity conservation, pest plant and animal control, and on-ground staff presence particularly with a view to improving current levels of compliance with regulations.

Interim management, minor boundary adjustments and boundary survey

R3

Upon government acceptance of the recommendations in this report that:

- (a) relevant land be managed in accordance with those recommendations
- (b) subsequent implementation of the recommendations allow flexibility for minor boundary adjustments, and
- (c) priority be given to the survey of public land boundaries, especially along stream frontages.

As noted in earlier chapters, the Yellingbo investigation area supports a range of significant and in some cases unique ecological values but these values are under considerable threat from sources such as pest plants and animals, altered hydrology, potentially inappropriate fire regimes, eucalypt dieback and other consequences of declining condition of native vegetation. This is despite a long history and very high level of community and government support for a broad range of nature conservation activities. Although these activities have prevented the loss of many ecological values—notably the helmeted honeyeater and lowland Leadbeater's possum—there is still no clear trend of overall improvement in the health of biodiversity across the area.

There is a need to refocus and reinvigorate on-ground work for nature conservation: to increase the profile of nature conservation in the area, to strengthen the productive but generally informal cooperation between groups working in this area, to improve the cohesion of the diverse range of activities and groups, and to provide a focus to attract external support additional to that currently provided by the active community groups.

Currently, there is no directly relevant template for managing land across multiple land tenures for nature conservation in Victoria. However, there are several examples where recreation in natural settings has provided a unifying theme to bring together the work of several different land managers across a variety of land units and tenures (see box 5.1).

In many ways, the issues facing managers of recreational open space along urbanised waterways are analogous to those facing the large number of nature conservation managers in the Yellingbo investigation area. For example, future work of the helmeted honeyeater recovery team would be considerably streamlined if there was a single management body to discuss options such as potential sites for future establishment of new colonies, for habitat experimentation and manipulation, for addressing threats such as unfavourable hydrology or pest plants and animals, or to provide connectivity between colonies.

One potential approach to improve cohesion is to establish a single large land unit, with a single management body, to include and connect all public land with significant nature conservation values. This is essentially the model proposed by many submitters supporting a State Emblems Park for the area. VEAC has carefully considered these submissions and is recommending a modified version of this approach—a State Emblems Conservation Area which is intended to capture all the advantages of the suggested park as well several important additional benefits. It would operate as a nature conservation equivalent of the recreation 'parklands' model described in box 5.1.

Box 5.1

Managing across tenures for recreation – the 'parklands' model

Areas along rivers or creeks in urban settings under different land tenures are sometimes managed together, and are collectively known as 'parklands' as a means of designating the unifying theme of recreation in natural settings. Typically, because of the flood-prone nature of the land, there are areas of publicly accessible open space of varying ownership along these waterways. Particularly where there is little other contiguous open space and relatively high population density, people start to use these areas for activities such as walking, cycling, jogging and birdwatching.

State and local government land managers may then start to provide facilities for these users, such as paths, bridges, and seats. By this stage there may be high levels of community use and reliance on the land; it may be used for more organised recreation or for regular transit by commuters for example. In time, issues start to emerge. Typically there is demand for more facilities, conflicts with other users, impacts on natural and recreational values through over-use and, notably, lack of management cohesion. This last problem manifests most visibly where paths that are the responsibility of different land managers do not connect.

State government and local councils move to a more integrated approach when it becomes clear that disconnected management is not resolving the issues and may even be exacerbating some of them. They start to meet with each other and with stakeholders with a view to integrating their management to address the issues and optimise the benefits from what by now has become a highly valued public asset.

The Barwon River Parklands in Geelong is an example of this form of management underpinned by a Memorandum of Cooperation between land managers.

The proposed State Emblems Conservation Area brings together existing public land with high current or potential value for nature conservation, and encompasses two separate but complementary components (see figure 5.1): a core area and a supplementary area. Private land such as Council-owned bushland reserves and land with Trust for Nature covenants could also be considered part of the Conservation Area in the future if landowners wished to voluntarily opt in.

The core area is proposed to be made up of:

- ✦ Yellingbo, Warramate Hills and Sassafras Creek nature conservation reserves and some small adjoining areas, Hoddles Creek Education Area, Beenak Bushland Reserve, and key stream frontages of the Menzies, Emerald, Shepherd and part of Woori Yallock creeks consolidated into the proposed State Emblems Nature Conservation Reserve
- ✦ Coranderk Nature Conservation Reserve which will continue to be managed by Zoos Victoria
- ✦ two Trust for Nature protected areas
- ✦ key stream frontages along the Yarra River and Hoddles and Wet Lead creeks where grazing is proposed to be phased out within two years and licences converted to riparian management licences or surrendered.

The supplementary area is public land of smaller extent retained in a variety of public land categories, including land where there are additional management objectives of comparable priority to nature conservation.

The supplementary area is proposed to include:

- ✦ Wright Forest Bushland Area
- ✦ Haining Park Education Area
- ✦ stream frontages along the Little Yarra River and the Britannia, McCrae and Cockatoo Creeks, and parts of the Woori Yallock Creek and the Yarra River, where grazing is proposed to be phased out by 2018 and licences converted to riparian management licences or surrendered.

Most of this land is currently managed at least partly for nature conservation but its incorporation under a single overarching designation will give primacy to, and recognition of the importance of management to enhance biodiversity values. Blocks of public land in the supplementary area could be readily added to the core in the future should circumstances change and that became a desirable course of action.

Management direction for the State Emblems Conservation Area is proposed to be determined through a formal management agreement between each of the key organisations involved in managing land for nature conservation in the region and administered through a coordinating management committee of representatives from these organisations. This management committee

would be supported by an advisory group of community representatives which would also facilitate broader community engagement and liaison. It is envisaged that the advisory group comprise around 10-15 people, with representation spanning the range of interests across the investigation area. The management committee would also be able to convene other advisory groups if required, such as for research, education or promotion. These may be supported by the establishment of teams from the relevant organisations (or for which separate funding has been secured) of people working to deliver outcomes in these areas of interest.

Key tasks and roles for the State Emblems Conservation Area management committee cover all aspects of public land management relevant to the designated area including:

- ✦ developing a vision for the land and its management
- ✦ the vision will form the basis for management objectives focusing on improving outcomes such as:
 - the status of threatened species
 - improved pest plant and animal control
 - enhancing the condition of existing native vegetation
 - guiding revegetation and restoration of native vegetation
 - education and promotion
 - addressing research needs
- ✦ developing policy, and advocating and negotiating for nature conservation in the region
- ✦ management planning, including a framework for community engagement and identifying research needs
- ✦ coordinated engagement in other relevant regional planning processes such as tourism and fire management planning
- ✦ acting as a Committee of Management under the *Crown Land (Reserves) Act 1978* for current and future unlicensed Crown land stream frontages as required
- ✦ generating communications materials and publicity
- ✦ invigorating and bringing together community groups to strengthen and build on the existing shared focus on public land and nature conservation
- ✦ seeking additional funding, for example through grants and partnerships.

VEAC envisages the State Emblems Conservation Area becoming widely known as the key platform for nature conservation in the fragmented landscapes between the Yarra and Dandenong Ranges. The conservation area and its management committee will serve as a focus to invigorate and thereby attract greater support for management for nature conservation by government organisations and the community.

DRAFT RECOMMENDATIONS

R4

State Emblems Conservation Area

That a State Emblems Conservation Area be designated to include the 2942 hectare area shown on figure 5.1 and in table 5.1, and that this area:

- (a) be managed to conserve and protect ecological values
- (b) provide opportunities for recreation where compatible with the conservation of biodiversity and ecological values
- (c) be managed in accordance with directions set in a management agreement between each of the key organisations involved in managing land for nature conservation in the region (recommendations R5 and R6), and
- (d) be managed in an integrated and coordinated manner across all constituent land units grouped into two components:
 - (i) a core area comprising the proposed State Emblems and Coranderk nature conservation reserves (1999 hectares, recommendations A1 and A2), Trust for Nature protected areas (14 hectares) and public land along the Yarra River and Hoddles and Wet Lead creeks (364 hectares, mostly Natural features reserves – stream frontage) and other small areas listed in table 5.1, and
 - (ii) a supplementary area (568 hectares) comprising all other public land within the conservation area (see note 1);

and that:

- (e) regulations be developed for the Crown land in the conservation area to provide, as far as possible, clarity and consistency for managers and stakeholders; and
- (f) provision be made for land, including local council and private land on a voluntary basis, to be added to the supplementary component of the conservation area where, by agreement, the objectives of the conservation area would apply; and
- (g) provision be made for public land to be moved from the supplementary to the core component of the conservation area on the advice of the Management Committee recommended in R5.

Note:

1. See recommendation C Natural Features Reserve for more details particularly in relation to stream frontage licences.

R5

That:

- (a) a Management Committee be established to, in accordance with these recommendations, oversee and coordinate land management for nature conservation, set strategic directions and policies, direct land management accordingly, and increase the profile of the area's biodiversity and ecological values and their protection;

and that:

- (b) the Management Committee comprise a representative from each of Parks Victoria, Melbourne Water, Yarra Ranges Council, Department of Sustainability and Environment, Zoos Victoria, Port Phillip and Westernport Catchment Management Authority and Trust for Nature
- (c) one of the government agencies represented on the Management Committee assume hosting responsibility for the office of the committee and that this hosting role rotate every two years
- (d) a community advisory group of stakeholders covering the range of interests and landscapes across the investigation area, be established to advise the Management Committee
- (e) the Management Committee establish other advisory groups as it deems necessary
- (f) the Management Committee have ongoing responsibility for advice to government on adjustments to the public land areas included in the State Emblems Conservation Area, with particular reference to recommendations R3(c), R4(g) and C(f)
- (g) the Management Committee be constituted as a Committee of Management under the *Crown Land (Reserves) Act 1978* for Crown land in the Conservation Area if required (recommendation C).

R6

That the Management Committee be established under a formal Management Agreement of the parties which will:

- (a) establish a vision for the land and its management
- (b) establish management objectives
- (c) delineate the functions and responsibilities of the government management agencies, and
- (d) identify arrangements for coordination of management and administrative activities.

Nature conservation reserves, formerly known as flora/fauna reserves, contain some of Victoria's most important biodiversity values (see chapter 3). Here nature conservation is the primary objective and protection of natural values is given the highest management priority. Other uses must be assessed for potential to conflict with natural values, and are permitted only where compatible. This has meant that for some of these reserves no public access is provided in order to protect the natural values. This is the case for much of the Yellingbo Nature Conservation Reserve where restricting disturbance to the threatened species is a critical management issue, and also for the Coranderrk Nature Conservation Reserve where there is limited public access. Furthermore, many conservation values here are not represented elsewhere, while opportunities for other uses of public land are more widespread.

Nationally and internationally, national parks have multiple objectives providing for nature conservation, often in extensive landscapes, but also providing for compatible recreation in this setting with the consequent expectation of relatively high levels of visitor access. Many national and similar parks in Victoria are well recognised tourist attractions and among the most visited public land areas in Victoria (e.g. Dandenong Ranges National Park). Large areas of these parks and state forests have been set aside for conservation and recreation immediately adjacent to the investigation area.

Because of the fragmented nature of the public land estate of the Yellingbo investigation area, Council's view is that nature conservation reserve is the most appropriate category to protect its ecological values.



DRAFT RECOMMENDATIONS

A

General recommendations for nature conservation reserves

That the nature conservation reserves numbered A1 and A2, as shown on map D:

- (a) be used to:
 - (i) conserve and protect species, communities or habitats of indigenous flora and fauna
 - (ii) provide for educational and scientific study, where consistent with (i) above
 - (iii) provide for recreation by small numbers of people, where consistent with (i) above;
- (b) generally permit the following activities, where compatible with (a):
 - (i) bushwalking, nature observation, heritage appreciation, picnicking
 - (ii) for Crown land, exploration and mining for minerals and searching for and extraction of stone resources subject to the consent of the Crown land Minister under the relevant legislation;
- (c) exclude the following activities:
 - (i) grazing of domestic stock (see note 2)
 - (ii) harvesting of forest products
 - (iii) hunting and use of firearms (see note 3)
 - (iv) solid fuel fires at any time of year (see note 4)
 - (v) dog walking
 - (vi) horse riding;
- (d) be permanently reserved, if Crown land is not already appropriately reserved for conservation purposes, under the *Crown Land (Reserves) Act 1978*.

Notes:

1. The above management objectives and land use recommendations are those that generally apply for the land use category. Exceptions to these may apply to specific reserves in special circumstances.
2. Grazing may be contracted for ecological or management purposes such as targeted weed control but current licences in the existing Sassafraz Creek Nature Conservation Reserve should be terminated as soon as possible.
3. Hunting and the use of firearms may be authorised as part of a pest animal control program.
4. Fire may be utilised as a land management tool where compatible with ecological values.

State Emblems Nature Conservation Reserve

The recommended State Emblems Nature Conservation Reserve forms the majority of the core area of the State Emblems Conservation Area. It consolidates the existing nature conservation reserves and other significant blocks of native vegetation in the area with the stream frontages that link them.

This recommended nature conservation reserve consolidates the following existing public land units, many of which are described in more detail in chapter 3:

- ✦ the existing Yellingbo Nature Conservation Reserve (661 hectares) and 7 hectares of adjoining unused road reserve
- ✦ the existing Sassafras Creek Nature Conservation Reserve (193 hectares)
- ✦ the existing Warramate Hills Nature Conservation Reserve (490 hectares) and 7.3 hectares of adjoining natural features reserve – stream frontage along the Yarra River and Woori Yallock Creek
- ✦ the existing Hoddles Creek Education Area (278 hectares). Extensive investigation of the natural values of this area has been undertaken by the Friends of Hoddles Creek, indicating amongst other significant values the presence of Cool Temperate Rainforest, and very high quality native vegetation throughout most of the block. Perhaps because of its relative inaccessibility the area attracts very little visitation at all, and certainly not the large school groups for which education areas are primarily intended
- ✦ the existing Beenak Bushland Reserve (126 hectares) is another relatively inaccessible area investigated by the Friends of Hoddles Creek and where increased conservation protection is likely to have little if any effect on other current uses
- ✦ existing Natural features reserve – stream frontages along:
 - the entire length of Shepherd Creek within the investigation area and the Woori Yallock Creek between the existing Yellingbo and Sassafras Creek nature conservation reserves. These frontages have been the focus of a program by DSE and Melbourne Water to remove grazing in preparation for management for ecological values
 - Emerald and Menzies Creeks upstream of the existing Sassafras Creek Nature Conservation Reserve and some small contiguous reserves.

Application of regulations

For areas reserved under the *Crown Land (Reserves) Act 1978* making specific regulations for each reserved area is a time-consuming process. The existing nature conservation reserves do not have a consistent set of regulations covering all the current area, the situation being more complex by part of Yellingbo Nature Conservation Reserve currently also being subject to the *Wildlife Act 1975*. As a result, it is often not possible or practical for land managers to control detrimental activities. In addition, some areas within existing Government-accepted nature conservation reserves have not yet been reserved appropriately, largely due to complexity in administrative processes or land tenure.

Uncertainty about the applicability of current regulations has hindered land management leading to an erosion of community values and integrity of the existing reserves. The necessity to pursue enforcement through costly and time-consuming prosecution through the courts has also been an impediment for land and waterway managers. With such highly threatened natural values present in this area, it is important to have all available land management tools at the disposal of land managers, as both a deterrent and a means of enforcement.



DRAFT RECOMMENDATION

A1

State Emblems Nature Conservation Reserve

That:

(a) the area of 1855 hectares shown on map D as the State Emblems Nature Conservation Reserve be used in accordance with the general recommendations for nature conservation reserves;

and that:

(b) this area be permanently reserved as a single unit under the *Crown Land (Reserves) Act 1978*

(c) regulations be applied to protect natural values across the entire reserve; and

(d) this area be managed in accordance with the management agreement proposed in recommendation R6 and directions set by the recommended Management Committee of the State Emblems Conservation Area (recommendation R5).

A2

Coranderrk Nature Conservation Reserve

The existing Coranderrk Nature Conservation Reserve (144 hectares) is located to the north of the proposed State Emblems Nature Conservation Reserve and is managed by Zoos Victoria as a Committee of Management. It has limited public access and other specific management arrangements relating to its close proximity to Healesville Sanctuary. Accordingly it is more appropriate to retain it as a separate entity from the proposed State Emblems Nature Conservation Reserve but integrated with it and other key public land areas managed for nature conservation in the core area of the State Emblems Conservation Area. Otherwise, no change is proposed for this area, that is, continuing limited public access and Zoos Victoria's management.

DRAFT RECOMMENDATION

A2

Coranderrk Nature Conservation Reserve

That:

(a) the area of 144 hectares shown on map D as the Coranderrk Nature Conservation Reserve be used in accordance with the general recommendations for nature conservation reserves;

except that

(b) public access and recreation including bushwalking, nature observation, heritage appreciation and picnicking may continue to be limited at the discretion of the land manager;

and that

(c) this area be permanently reserved as a single unit under the *Crown Land (Reserves) Act 1978*; and

(d) this area be managed in accordance with the management agreement proposed in recommendation R6 and directions set by the recommended Management Committee of the State Emblems Conservation Area (recommendation R5).

Note:

1. Zoos Victoria should continue to manage this nature conservation reserve.

As mentioned in chapter 3, as well as carrying out various activities on private land, Trust for Nature retains and manages two properties in the investigation area: 4.2 hectares near Emerald and 10.1 hectares at Wanderslore. Such land forms part of the public land protected area system, as reflected in the following recommendations. With their primary objective of biodiversity conservation, these properties are proposed to be considered part of the core area of the State Emblems Conservation Area.

DRAFT RECOMMENDATIONS

B

General recommendations for Trust for Nature protected areas

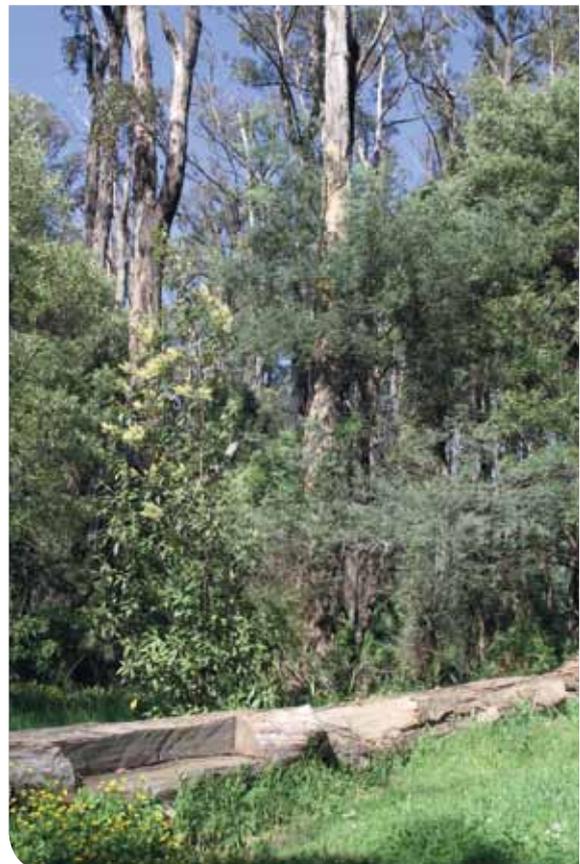
Trust for Nature protected areas as shown on map D, according to their specific values:

- (a) be used to:
 - (i) conserve and protect species, communities or habitats of indigenous flora and fauna
 - (ii) provide for educational and scientific study, where consistent with (i) above
 - (iii) provide for recreation by small numbers of people, where consistent with (i) above
 - (iv) identify and protect cultural heritage values, where consistent with (i) above;
- (b) continue to be managed by Trust for Nature, and:
 - (i) should these areas no longer be required by Trust For Nature, that the areas be transferred to the Crown; and
 - (ii) be permanently reserved for conservation purposes under the *Crown Land (Reserves) Act 1978*.

While the values of natural features reserve are not as significant as those of national parks and nature conservation reserves, these areas nonetheless provide for protection of remnant native vegetation and habitat together with opportunities for education and passive recreation. Sub-categories of public land in this category are grouped into those usually considered part of the protected area system, comprising bushland areas, natural and scenic features areas, and streamside areas, and those that are not, of which stream frontages are the main example in the investigation area.

Substantial areas of existing natural features reserves have been included in the proposed State Emblems Nature Conservation Reserve (recommendation A1). Those areas retained as natural features reserves are mostly stream frontages which form important biolinks or more isolated small blocks of public land (e.g. Picnic Hill and Nangana bushland areas). A summary of the proposed approach to stream frontages is provided in box 5.2

A comprehensive list of the stream frontages and other natural features reserves included in the core and supplementary components of the State Emblems Conservation Area is provided in table 5.1 and mapped on figure 5.1. Other natural features reserves are not included under the State Emblems Conservation Area.



DRAFT RECOMMENDATIONS

C

General recommendations for natural features reserves

That the natural features reserves, as shown on map D, according to their specific characteristics:

(a) be used to:

- (i) protect natural features and values
- (ii) protect and restore areas with remnant vegetation or habitat value and conserve indigenous flora and fauna
- (iii) protect water quality where appropriate
- (iv) protect historic and Aboriginal cultural heritage features, values and sites
- (v) provide opportunities for education and recreation, at levels consistent with (i) to (iv) above
- (vi) maintain scenic features and the character and quality of the local landscapes
- (vii) preserve features of geological or geomorphological interest;

(b) generally permit the following activities:

- (i) exploration for minerals, and mining, subject to decisions on particular cases
- (ii) prospecting and apiculture;

(c) exclude the following activities:

- (i) timber harvesting
- (ii) domestic stock grazing in bushland and streamside areas, and in stream frontages under riparian management or conservation licences or where not currently licensed (see notes below)
- (iii) domestic stock grazing in stream frontages along Hoddles and Wet Lead Creeks and the Yarra River upstream of the existing Warramate Hills Nature Conservation Reserve beyond two years of the date of government acceptance of these recommendations (see notes below) through either conversion to riparian management licence with grazing excluded or surrender of licences, with licence boundaries to follow cadastral boundaries in accordance with recommendation R3(c) for areas not covered by recommendation C(f) below

- (iv) domestic stock grazing in all natural features reserves beyond 2018 (see notes below) through either conversion to riparian management licence with grazing excluded or surrender of licences, with licence boundaries to follow cadastral boundaries in accordance with recommendation R3(c) for areas not covered by recommendation C(f) below;

and:

- (d) any licences permitting grazing that are subject to transfer through sale of nearby private land not be renewed or be converted to riparian management licence
- (e) the term of any ongoing licences permitting grazing by domestic stock prior to phase out at the end of 2018 (in accordance with recommendation C(c)(iii) above) be limited to no more than 12 months (that is, require annual renewal)
- (f) the Management Committee of the State Emblems Conservation Area (established under recommendation R5) initiate and administer a process to fairly and consistently determine arrangements for boundaries where existing agreements with Melbourne Water do not follow the public-private land boundary
- (g) include unused road reserves in adjoining natural features reserves where appropriate ecological or recreational values are identified
- (h) be permanently reserved under the *Crown Land (Reserves) Act 1978* if not already appropriately reserved; or
- (i) be managed in accordance with the above if public authority owned land.

Notes:

1. Grazing may be contracted for ecological or management purposes such as targeted weed control.
2. Unless previously agreed otherwise under the Melbourne Water Stream Frontage Management Program, all future changes to licences including those proposed here (such as licence surrender or termination, or conversion to a different licence type) should adhere to surveyed public-private land boundaries resulting from recommendation R3(c).
3. Both the core and supplementary components of the recommended State Emblems Conservation Area (recommendation R4) contain current and future conservation and riparian management licences. The supplementary component also includes current water frontage licences until these are phased out by 2018.
4. The removal of licensed grazing does not necessarily compel the removal of stock watering; off-stream watering can be provided for, where appropriate.

Box 5.2

Proposed approach to stream frontages

In summary, VEAC is recommending that current stream frontages (formally 'Natural features reserve – stream frontage') meeting the following criteria be included in the core component of the proposed State Emblems Conservation Area (recommendation R4):

- those that support significant biodiversity values
- those that form part of a habitat corridor, or have the potential to do so
- those subject to other existing measures for protection (e.g. Heritage River)
- those that contribute to the consolidation of land status
- those where the preceding attributes are currently under threat or are prone to future threat.

In specific terms, this translates to most of the current stream frontages that are not already managed for biodiversity conservation (usually under riparian management licence or conservation licence) on public land along the following waterways either

- (i) forming part of the proposed State Emblems nature conservation reserve (recommendation A1):
 - the Woori Yallock Creek between the existing Yellingbo and Sassafras Creek nature conservation reserves
 - Menzies Creek (upstream of Sassafras Creek Nature Conservation Reserve)
 - Emerald Creek (upstream of Sassafras Creek Nature Conservation Reserve)
 - Shepherd Creek (entire length within the investigation area);



or

- (ii) areas under current water frontage (grazing) licences which are proposed to be surrendered or converted to riparian management licence within two years – (recommendation C(c)(iii)):
 - Yarra River from the existing Warramate Hills Nature Conservation Reserve upstream to Millgrove
 - Hoddles Creek (entire length within the investigation area)
 - Wet Lead Creek (a short tributary of Hoddles Creek linking it to the current Hoddles Creek Education Area).

All other stream frontages are recommended to remain as Natural features reserve–stream frontage. Most of these areas are to be included in the supplementary component of the proposed State Emblems Conservation Area (recommendation R4). Licences permitting grazing are to require annual renewal prior to conversion to riparian management licence or the surrender of all such licences by the end of 2018 (recommendation C).

This approach is intended to augment and support Melbourne Water's ongoing Stream Frontage Management Program which works with landholders to assist with activities to improve frontage management e.g. fencing, bank stabilisation, pest control, provision of off-stream watering (see chapter 4 for more details). Such assistance would be available where water frontage (grazing) licences are converted to riparian management licences in accordance with the recommendations in this draft proposals paper.

This category groups a broad range of public utilities such as transport (roads, railway), cemeteries, government buildings such as hospitals, nursing homes, justice services including courts, police or fire stations, water or sewage treatment and easements, survey markers, electricity and gas.

In this investigation area, government road reserves comprise some 38 per cent of all public land, more than any other public land use category. The primary purpose of road reserves is for transport and access. VicRoads manages major arterial roads and local government manages other roads. Unmade government roads (often known as 'paper roads') may be licensed to the adjoining land owner for grazing or other purposes.

DRAFT RECOMMENDATIONS

D

General recommendations for services and utilities areas

That reserves and easements for public services and utilities such as transport, electricity and gas, communications, cemeteries, water and sewerage as shown on map D be used for those purposes; and that:

- (a) new services, or utility sites and easements or lines, not be sited in or across nature conservation reserves
- (b) railways, roadsides and other service and utility sites be managed to protect natural values including remnant native vegetation and habitat, and Aboriginal cultural heritage values, as far as practical
- (c) road reserves identified as supporting native vegetation of high conservation significance (including for connectivity) be managed to protect, improve or enhance their biodiversity values; and
- (d) should public land used for service or utility purposes no longer be required, it be assessed for its natural, recreational and cultural heritage values, and capability for other public uses.

Notes:

1. Not all roads and unused road reserves may be distinguishable on maps A and D.
2. There are numerous government roads across the investigation area that contain remnant native vegetation. These should be managed to protect this vegetation, as required under relevant legislation, and where it does not interfere with the primary objective of the road.

Box 5.3

Native vegetation on road reserves

Road corridors may have high conservation, recreation and landscape values, especially in more urbanised or agricultural landscapes where native vegetation has been largely cleared. Other than stream frontages, vegetated road reserves may provide the most important habitat linkages in cleared or fragmented landscapes.

Many road reserves support native vegetation of high natural value, provide habitat for fauna or contribute to the aesthetic landscape values. Yarra Ranges Council has mapped roadsides of significant natural value, and biodiversity mapping which includes characteristics such as vegetation condition can now provide more information about natural values on road reserves. Together this information provides the opportunity to identify road reserves that warrant special management arrangements for nature conservation. A relatively small proportion of these road reserves may be appropriate for addition to the protected area system and are described in the relevant draft recommendations in this chapter. For most road reserves, conservation licences and management agreements with willing managers such as adjoining landholders and conservation groups are an appropriate mechanism to protect important natural values. Such agreements should involve local government or VicRoads where there are public roads.



5.7

Regional park, state forest, historic and cultural features reserves and community use areas

There are a number of public land units, in a variety of existing categories, for which no changes to existing uses and management are proposed, although in some instances minor adjustment of boundaries or formal recognition of existing uses has occurred. VEAC's proposals for all these different areas are continuation of the application of the relevant government-accepted LCC Melbourne District 2 Review final recommendations. For simplicity and clarity these areas are grouped together in this section. The areas are summarised as follows:

- ✦ 19 hectares of Kurth Kiln Regional Park
- ✦ a 2.4 hectare area of state forest east of Healesville-Koo Wee Rup Road north of Woori Yallock
- ✦ historic and cultural features reserves along the Puffing Billy railway (46 hectares) and the former Yarra Junction railway station (0.6 hectares). Council notes that Puffing Billy Historic Reserve contains important scenic and natural values including biodiversity values
- ✦ a large number of community use areas, the largest being Lilydale-Warburton rail trail (89 hectares) and Haining Farm (69 hectares).

DRAFT RECOMMENDATIONS

E

Recommendations for regional park, state forest, historic and cultural features reserves and community use areas

That the areas shown as regional park, state forest, historic and cultural features reserves and community use areas on map D, continue to be used and managed in accordance with the relevant government-accepted LCC Melbourne District 2 Review final recommendations for the respective public land use categories.

Note:

1. Haining Farm is proposed to remain on Schedule Three of the *National Parks Act 1975*.

5.8

Uncategorised public land

Uncategorised public land is a broad category for which no specific use is recommended. In some cases, this includes areas that are formally reserved and have a reservation purpose, but have not been categorised because they were excluded from previous Land Conservation Council investigations, such as former townships and land acquired by government agencies or statutory authorities since the last systematic assessment. In many of these areas, new public land use recommendations simply formalise existing reservation or use. In other cases, there may be public land that has no clear primary use and, subject to assessment of any public land attributes present on the site, either assigned to an appropriate land manager or disposed of through sale. The Department of Sustainability and Environment carries out these assessments of Crown land parcels. Public land attributes are the resources (or natural, recreational, heritage, scenic or economic values) present on a site that would generally require its retention as Crown land. Crown land that has minimal or no such values or resources is considered surplus to government needs and may be disposed of. In certain circumstances, and after native title assessments have been made, disposal may be undertaken as a land exchange for nearby private land with high public land values.

DRAFT RECOMMENDATIONS

F

General recommendations for uncategorised public land

Public land other than that recommended for specific uses in this report, or subject to previous accepted specific land use recommendations:

- (a) be uncategorised public land
- (b) existing legal use and tenure continue for the time being
- (c) Crown land be assessed and either:
 - (i) retained and assigned to a Department of Sustainability and Environment land manager if it has public land values, or
 - (ii) disposed of if assessed as having no public land values and as being surplus to current and future community needs;
- (d) surplus public authority land be:
 - (i) assessed for its potential to meet alternative public uses
 - (ii) retained as public land where certain public land values are identified; or
 - (iii) disposed of if assessed as having no public land values and as being surplus to current and future community needs.

Box 5.4

Proposed approach to horse riding

VEAC received a number of submissions in support of maintaining or increasing access for horse trail riding on public land, particularly in the area within and south of the southern boundary of the existing Yellingbo Nature Conservation Reserve. Many were seeking rides along routes leading to and from the properties where their horses are held, rather than having to float horses to trails.

In considering these proposals VEAC took into account that the demand for such opportunities and specific preferences for linking bridle trails on public land will vary over time as landholders change. The long-term provision of horse riding opportunities requires an approach that can adapt to changing demands and other changes such as increased road traffic. The Yarra Ranges Council Equestrian Strategy³³ aims to achieve this objective and, with updates as necessary, is considered to be the appropriate approach into the future. VEAC's view is that, while horse riding appears to be increasingly popular in the region and that existing opportunities are under pressure, the public land in the Yellingbo area is limited, fragmented, and supports highly significant values under great threat, and it is therefore not appropriate to change the rules that generally exclude horse riding from nature conservation reserves.

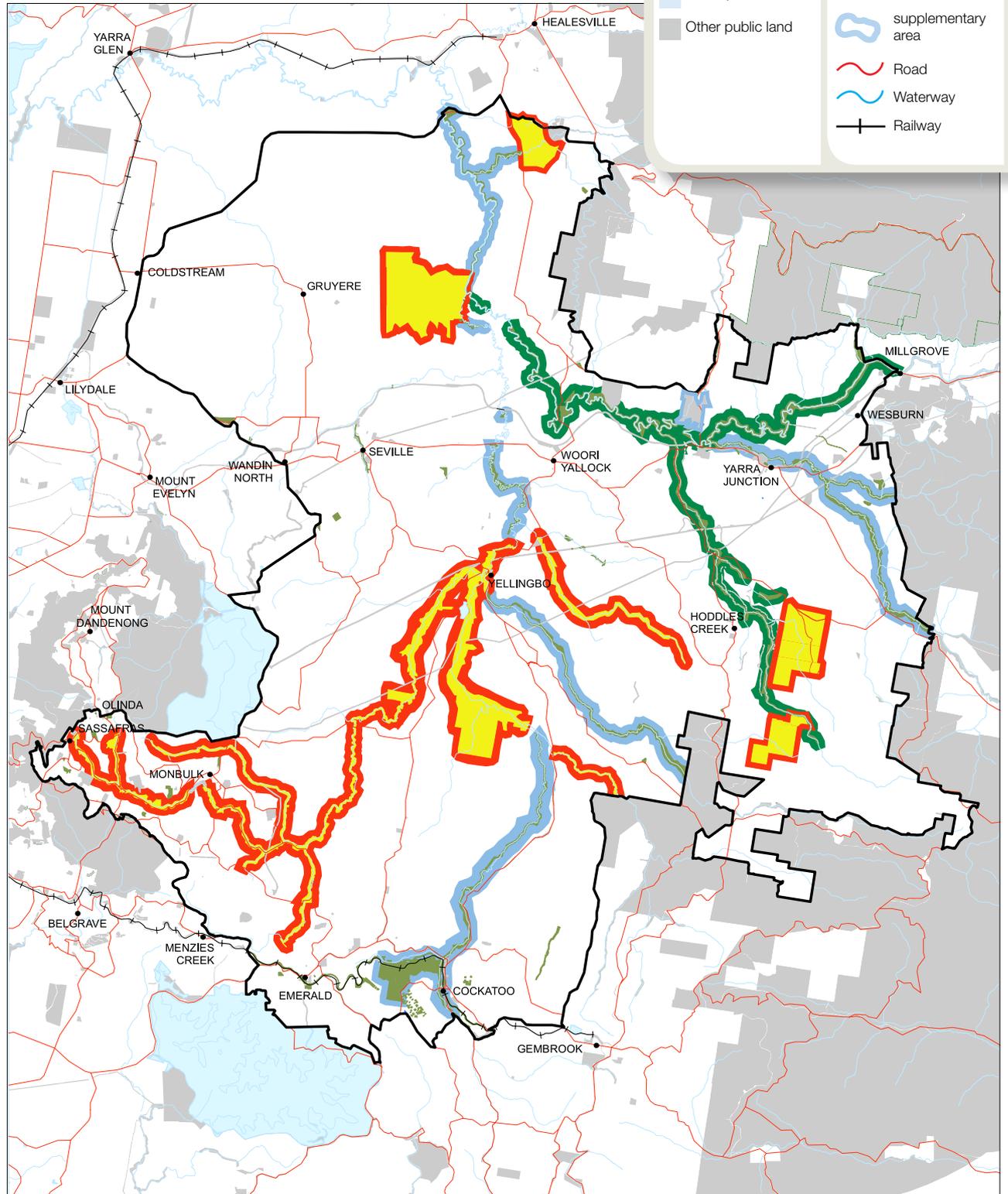


The two key outcomes from VEAC's draft recommendations in the area south of the existing Yellingbo Nature Conservation Reserve are:

- no loss of existing routes used for horse riding
- no access to the recommended nature conservation reserves (A1 and A2) for horse riding.

Horse riding will continue in areas such as Wright Forest Bushland Reserve near Cockatoo, and Evans Road along but immediately outside the southern boundary of the existing Yellingbo Nature Conservation Reserve. No change is recommended to the general exclusion of horse riding from nature conservation reserves (including existing nature conservation reserves and the recommended additional areas).

Figure 5.1
Simplified representation of State Emblems Conservation Area core and supplementary components



For most stream frontages, implications of the recommendations fall into one of the four outcomes below. The small number of exceptions and additional provisions are also detailed below.

Existing water frontage (grazing allowed) licences

1. Within the red and green boundaries on the map in figure 5.1 opposite, licensees will be given two years from government acceptance of these recommendations to convert licences to riparian management licences (no grazing) or surrender licences (no grazing).
2. Within the blue boundaries on the map in figure 5.1, at the end of 2018, any licences still current will be converted to riparian management licence (no grazing) or surrendered. Until then no change is proposed other than the additional provisions below, but changes may result from other sources such as the ongoing Melbourne Water Stream Frontage Management Program.

Existing riparian management licences and conservation licences

3. No change but if licences are surrendered the land may remain as natural features reserve or be added to the proposed State Emblems Nature Conservation Reserve (recommendation A1) in accordance with recommendation R4(g).

Unlicensed public stream frontages

4. a) those within the red boundaries become part of the proposed State Emblems Nature Conservation Reserve (recommendation A1)
- b) those within the green boundaries remain as natural features reserve but in the future may be added to the proposed State Emblems Nature Conservation Reserve (recommendation A1) in accordance with recommendation R4(g)
- c) no change to public land use category for those within the blue boundaries and elsewhere in the investigation area.

Additional provisions and minor variations to stream frontage implications

Additional provisions

The following provisions apply across the investigation area:

- ✦ all water frontage (grazing) licences to be converted to annual licences within two years
- ✦ unless previously agreed otherwise under the Melbourne Water Stream Frontage Management Program, all future changes to licences including those proposed here, such as licence surrender or termination or conversion to a different licence type, should as a minimum adhere to surveyed public-private land boundaries resulting from implementation of recommendation R3(c)
- ✦ arrangements for licences where existing agreements with Melbourne Water do not follow the public-private land boundary be clarified in accordance with the outcomes of an assessment by the proposed Management Committee of the State Emblems Conservation Area to establish a process to deal with these anomalies (recommendation C(f))
- ✦ the removal of licensed grazing does not necessarily compel the removal of stock watering; off-stream watering can be provided for where appropriate.

Variations relating to water frontage (grazing allowed) licences only

A very small number of existing water frontage licences would have different outcomes to those outlined above:

- ✦ in the existing Sassafras Creek Nature Conservation Reserve and Emerald Creek stream frontage, licences are proposed to be terminated at the time of government acceptance of these recommendations
- ✦ outside the proposed State Emblems Conservation Area, there is no change other than the additional provisions above, but changes may result from other sources such as the ongoing Melbourne Water Stream Frontage Management Program.

Table 5.1

Summary of public land units in the proposed State Emblems Conservation Area (SECA)

Current public land unit	Area (ha)	Recommended public land unit	SECA component
Yellingbo Nature Conservation Reserve and some abutting unused roads	668	A1 State Emblems Nature Conservation Reserve	core
Sassafras Creek Nature Conservation Reserve and Kallista Bushland Area (at Beagleys Bridge), Sassafras Creek Bushland Area and Sassafras Creek Reserve (consolidation)	195	A1 State Emblems Nature Conservation Reserve	core
Warramate Hills Nature Conservation Reserve and adjoining Woori Yallock Creek and Yarra River SFs	497	A1 State Emblems Nature Conservation Reserve	core
Hoddles Creek Education Area	278	A1 State Emblems Nature Conservation Reserve	core
Beenak Bushland Area	126	A1 State Emblems Nature Conservation Reserve	core
Woori Yallock Creek SF between Yellingbo and Sassafras Creek Nature Conservation Reserves	25	A1 State Emblems Nature Conservation Reserve	core
Shepherd Creek SF	16	A1 State Emblems Nature Conservation Reserve	core
Menzies Creek SF	15	A1 State Emblems Nature Conservation Reserve	core
Emerald Creek SF	33	A1 State Emblems Nature Conservation Reserve	core
Coranderk Nature Conservation Reserve	144	A2 Coranderk Nature Conservation Reserve	core
Land owned and retained by Trust for Nature	14	B Trust for Nature protected areas	core
Yarra River SF upstream of Warramate Hills Nature Conservation Reserve, Woori Yallock Creek SF upstream of Warramate Hills Nature Conservation Reserve, and Hoddles and Wet Lead Creeks SFs	357	C Natural Features Reserve – stream frontage (see notes 1 and 2)	core
Hoddles Creek Bushland Area	4	C Natural Features Reserve – bushland area	core
Badger Creek and Yarra River SFs downstream of Warramate Hills Nature Conservation Reserve, Yarra River Streamside Area (Everald Park), Woori Yallock Creek SF downstream of Yellingbo Nature Conservation Reserve, Little Yarra River SF and Britannia, McCrae and Cockatoo Creeks SFs	389	C Natural Features Reserve – stream frontage (see note 3)	supplementary
Wright Forest Bushland Area	111	C Natural Features Reserve – bushland area Wright Forest Bushland Area	supplementary
Haining (Farm) Park Education Area	69	E Community Use Area Haining (Farm) Park Education Area (see note 4)	supplementary

Abbreviations: SF: natural features reserve – stream frontage

Notes:

- 1 water frontage (grazing) licences to be converted to riparian management or surrendered within 2 years
- 2 appropriate reaches may be added to A1 State Emblems Nature Conservation Reserve in accordance with recommendation R4(g). Approximately 65 hectares and 41 hectares of Yarra River and Hoddles Creek stream frontages respectively are currently unlicensed Crown land.
- 3 water frontage (grazing) licences to be converted to riparian management or surrendered by 2018
- 4 proposed to remain on Schedule Three of the *National Parks Act 1975*

The following table lists the organisations and individuals who made submissions in response to the Notice of Investigation.

Individuals

Ms Karen Alexander
 Mr Walter Berger
 Mr Darren Birthisel
 Ms Christina Bowen
 Ms Carolyn Buckland
 Mr Paul Buckland
 Ms Carol Campbell
 Mr Arthur Carew
 Ms Christine Coulson
 Mr Phillip Coulson
 Ms Samantha Dunn
 Ms Kerrie Fitzgibbon
 Ms Kate Forster
 Ms Elizabeth Fraser
 Ms Julie Harrison
 Mr Andrew Inglis
 Mrs Elizabeth Jacka
 D. & D. Kennedy
 Mr Michael Kerr
 Mr Peter Kerr
 Ms Vivienne Kerr
 Ms Michelle Knoll
 Mr Jeff Latter
 Ms Dianne Luc
 Mr Ian McKay
 Ms Deb McLeod
 Ms Deborah Mitchell
 Mr Steve Mitchell
 Mr Gary Moran
 Mr Lyle Murray
 Mr Philip Norman
 Mr Matthew Parker
 Shanon Phipps
 Mr Anthony Purton
 Ms Wendy Roy
 Mr Ron Sawyer
 Ms Janet Seccull
 Mr William Smith
 Mr Terry Swanson
 Ms Y. Virgona
 Mr Jeff Walker

Organisations

Australian Trail Horse Riders Association
 Birdlife Australia, Victorian Conservation Committee
 Bushwalking Victoria
 Cardinia Shire Council
 Country Fire Authority, Eastern Metropolitan Area
 Country Fire Authority, Eastern Metropolitan Regional
 Strategic Fire Management Committee (RSFMPC)
 Country Fire Authority, Yarra Valley Group
 Emerald Village Committee
 Friends of Hazel Vale Valley Tecoma
 Friends of Hoddles Creek Inc
 Friends of Leadbeater's Possum
 Friends of Sherbrooke Forest
 Friends of the Helmeted Honeyeater Inc
 Friends of Wright Forest
 Gembrook Township Committee
 Helmeted Honeyeater Recovery Team
 Johns Hill Landcare Group Inc
 Little Yarra Rural Fire Brigade
 Macclesfield Adult Riding Club Inc
 Macclesfield Landcare Group
 Maroondah Bushwalking Club Inc
 Monbulk Landcare Group
 Sherbrooke Lyrebird Survey Group
 Southern Dandenongs Landcare Group
 Southern Ranges Environment Alliance
 Woori Yallock Creek Park Alliance
 Yarra Ranges Council
 Yarra Valley & Dandenong Ranges Landcare Network
 Yarra Valley Equestrian Landcare Group
 Yellingbo Fire Brigade
 Zoos Victoria

Note: Confidential submissions have been excluded from this table

2 Appendix

List of threatened flora and fauna species recorded in the Yellingbo investigation area

As of October 2012, the Department of Sustainability and Environment's Flora Information System database and Atlas of Victorian Wildlife database contain records since 1980 for the following threatened taxa in the Yellingbo

investigation area. Additional information has been included for bird species observations in Yellingbo Nature Conservation Reserve by Birdlife Australia (previously BOCA) since 1975.

Legend

EPBC: status under <i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i> , as at October 2012.		
ce	Critically Endangered	A taxon is critically endangered when it is facing an extremely high risk of extinction in the wild in the immediate future.
E	Endangered	A taxon is endangered when it is not critically endangered but is facing a very high risk of extinction in the wild in the near future.
V	Vulnerable	A taxon is vulnerable when it is not critically endangered or endangered but is facing a high risk of extinction in the wild in the medium-term future.
CD	Conservation Dependent	A taxon is conservation dependent when it is the focus of a specific conservation program, the cessation of which would result in the taxon becoming vulnerable, endangered or critically endangered within a period of five years.
FFG: status under the Victorian <i>Flora and Fauna Guarantee Act 1988</i> , as at July 2012. For the most up-to-date listings under the Act, visit: http://www.dse.vic.gov.au .		
L	Listed as Threatened	
Vic: conservation status in Victoria. ^{46, 47}		
x	Presumed Extinct in Victoria	A taxon is extinct when there is no reasonable doubt that the last individual has died, or it has failed to be recorded from Victoria during the past 50 years despite intensive field searches at previously known sites and/or expected habitat.
ce	Critically Endangered	A taxon is critically endangered when it meets certain criteria and the best available evidence indicates that it is facing an extremely high risk of extinction in the wild. ⁴⁸
e	Endangered	When the best available evidence indicates that a taxon is at very high risk of extinction from the wild particularly if present land-use and other causal factors continue to operate. ⁴⁸
v	Vulnerable	Not presently endangered but likely to become so soon due to continued depletion; considered to be facing a high risk of extinction in the wild; occurring mainly on sites likely to experience changes in land-use which would threaten survival in the wild; or, taxa whose total population is so small that the likelihood of recovery from disturbance, including localised natural events such as drought, fire or landslip, is doubtful. ⁴⁸
nt	Near Threatened	A taxon is near threatened when it has been evaluated but does not qualify for critically endangered, endangered or vulnerable presently, but is close to qualifying or is likely to qualify in the near future for a threatened category.
r	Rare	Rare but not considered otherwise threatened—there are relatively few known populations or the taxon is restricted to a relatively small area.
k	Poorly Known	Poorly known and suspected, but not definitely known, to belong to one of the above categories within Victoria. At present, distribution or abundance information is deficient or inadequate to make a direct, or indirect, assessment of extinction risk. Generally referred to as data deficient when used to describe fauna.

Common name	Scientific name	EPBC	FFG	Vic
FLORA				
Brickmaker's sedge	<i>Gahnia grandis</i>			v
Cobra greenhood	<i>Pterostylis grandiflora</i>			r
Dandenong Range cinnamon wattle	<i>Acacia leprosa</i> (Dandenong Range variant)			r
Emerald (white) star-bush	<i>Asterolasia asteriscophora</i> subsp. <i>albiflora</i>		L	e
Fairy lanterns	<i>Thismia rodwayi</i>		L	v
Floating bladderwort	<i>Utricularia gibba</i>			v
Forest sedge	<i>Carex alsophila</i>			r
Green scentbark	<i>Eucalyptus fulgens</i>			r
Hybrid pittosporum	<i>Pittosporum bicolor x undulatum</i>			r
Lacy wedge-fern	<i>Lindsaea microphylla</i>			r
Long pink-bells	<i>Tetralochea stenocarpa</i>			r
Matted flax-lily	<i>Dianella amoena</i>	E		e
Mountain bird-orchid	<i>Chiloglottis jeansii</i>			r
Naked beard-orchid	<i>Calochilus imberbis</i>			r
Netted brake	<i>Pteris comans</i>			r
Perennial blown-grass	<i>Lachnagrostis perennis</i> spp. agg.			k
Powelltown correa	<i>Correa reflexa</i> var. <i>lobata</i>			r
Skirted tree-fern	<i>Cyathea X marcescens</i>			v
Slender tree-fern	<i>Cyathea cunninghamii</i>		L	v
Slender bitter-cress	<i>Cardamine tenuifolia</i>			k
Southern varnish wattle	<i>Acacia verniciflua</i> (southern variant)			k
Small fork-fern	<i>Tmesipteris parra</i>			r
Spurred helmet-orchid	<i>Corybas aconitiflorus</i>			r
Stalked brooklime	<i>Gratiola pedunculata</i>			k
Swamp bush-pea	<i>Pultenaea weindorferi</i>			r
Swamp everlasting	<i>Xerochrysum palustre</i>	v	L	v
Tree geebung	<i>Persoonia arborea</i>			v
Toothed leionema	<i>Leionema bilobum</i> subsp. <i>serrulatum</i>			r
Veiled fringe-sedge	<i>Fimbristylis velata</i>			r
Veined spear-grass	<i>Austrostipa rudis</i> subsp. <i>australis</i>			r
Wine-lipped spider-orchid	<i>Caladenia oenochila</i>			v
Wiry bossiaea	<i>Bossiaea cordigera</i>			r
Yarra burgan	<i>Kunzea leptospermoides</i>			k
Yarra gum	<i>Eucalyptus yarraensis</i>			r

2 Appendix

List of threatened flora and fauna species recorded in the Yellingbo investigation area

FAUNA				
Common name	Scientific name	EPBC	FFG	Vic
Invertebrates				
Dandenong freshwater amphipod	<i>Austrogammarus australis</i>		L	e
Dandenong burrowing cray	<i>Engaeus urostrictus</i>		L	ce
Tubercle burrowing cray	<i>Engaeus tuberculatus</i>			e
Sherbrooke amphipod	<i>Austrogammarus haasei</i>		L	V
Amphibians				
Growling grass frog	<i>Litoria raniformis</i>	V	L	e
Southern toadlet	<i>Pseudophryne semimarmorata</i>			v
Fish				
Australian grayling	<i>Prototroctes maraena</i>	V	L	v
Murray cod	<i>Maccullochella peelii peelii</i>	V	L	e
Reptiles				
Glossy grass skink	<i>Pseudemoia rawlinsoni</i>			nt
Lace monitor (goanna)	<i>Varanus varius</i>			v
Swamp skink	<i>Egernia coventryi</i>		L	v
Mammals				
Broad-toothed rat	<i>Mastacomys fuscus mordicus</i>			k
Brush-tailed phascogale	<i>Phascogale tapoatafa tapoatafa</i>		L	v
Common bent-wing bat	<i>Miniopterus schreibersii</i> GROUP	CD	L	u
Eastern horse-shoe bat	<i>Rhinolophus megaphyllus megaphyllus</i>		L	v
Grey-headed flying-fox	<i>Pteropus poliocephalus</i>	V	L	v
Leadbeater's possum	<i>Gymnobelideus leadbeateri</i>	E	L	e
Southern brown bandicoot	<i>Isodon obesulus obesulus</i>	E		
Southern myotis	<i>Myotis macropus</i>			nt
Spot-tailed quoll	<i>Dasyurus maculatus maculatus</i>	E	L	e

Birds

Common name	Scientific name	EPBC	FFG	Vic
Australasian bittern	<i>Botaurus poiciloptilus</i>	E	L	e
Australasian shoveler	<i>Anas rhynchotis</i>			v
Azure kingfisher	<i>Alcedo azurea</i>		L	nt
Baillon's crake	<i>Porzana pusilla palustris</i>			v
Barking owl	<i>Ninox connivens connivens</i>		L	e
Black falcon	<i>Falco subniger</i>			v
Blue-billed duck	<i>Oxyura australis</i>		L	e
Brolga	<i>Grus rubicunda</i>		L	v
Brown treecreeper (south-eastern ssp.)	<i>Climacteris picumnus victoriae</i>			nt
Brown quail	<i>Coturnix ypsilophora australis</i>			nt
Chestnut-rumped heathwren	<i>Calamanthus pyrrhopygius</i>		L	v
Eastern great egret	<i>Ardea modesta</i>		L	v
Grey goshawk	<i>Accipiter novaehollandiae novaehollandiae</i>		L	v
Hardhead	<i>Aythya australis</i>			v
Helmeted honeyeater	<i>Lichenostomus melanops cassidix</i>	E	L	e
Hooded robin	<i>Melanodryas cucullata cucullata</i>		L	nt
Intermediate egret	<i>Ardea intermedia</i>		L	ce
Latham's snipe	<i>Gallinago hardwickii</i>			nt
Lewin's rail	<i>Lewinia pectoralis pectoralis</i>		L	v
Masked owl	<i>Tyto novaehollandiae novaehollandiae</i>		L	e
Musk duck	<i>Biziura lobata</i>			v
Nankeen night-heron	<i>Nycticorax caledonicus hillii</i>			nt
Pied cormorant	<i>Phalacrocorax varius</i>		L	v
Powerful owl	<i>Ninox strenua</i>		L	v
Royal spoonbill	<i>Platalea regia</i>			v
Sooty owl	<i>Tyto tenebricosa tenebricosa</i>		L	v
Speckled warbler	<i>Chthonicola sagittatus</i>		L	v
Spotted harrier	<i>Circus assimilus</i>			nt
Spotted quail-thrush	<i>Cinclosoma punctatum</i>			nt
Square-tailed kite	<i>Lophoictinia isura</i>		L	v
Swift parrot	<i>Lathamus discolor</i>	E	L	e
Turquoise parrot	<i>Neophema pulchella</i>		L	nt
Whiskered tern	<i>Chlidonias hybridus javanicus</i>			nt
White-bellied sea-eagle	<i>Haliaeetus leucogaster</i>		L	v

The following table lists the extent of EVCs in the protected area system as described in chapter 3 and quantifies their current and pre-1750 extent.

Information on the pre-1750 and current extent of EVCs within the investigation area uses the most recent Department of Sustainability and Environment data (2005).

A detailed key for the column headings and symbols used in the table is provided here.

Definitions and Key

Columns 1 and 2:
Ecological Vegetation Classes (EVC) number and name

Names and identification numbers of Ecological Vegetation Class, including complexes and mosaics listed by EVC name alphabetical order. Map B shows the current extent of EVCs in the investigation area.

Column 3:
Bioregional conservation status (BCS)

Bioregional conservation status of each Ecological Vegetation Class.

E = endangered

V = vulnerable

D = depleted

LC = least concern

Criteria for bioregional conservation status categories are provided on the DSE website www.dse.vic.gov.au. The per cent remaining is a key factor in assigning EVCs to status categories.

Column 4:
Pre-1750 extent

Total extent in hectares thought to have been occupied by each EVC prior to European settlement for the investigation area.

Column 5:
Current extent (all land)

Total current extent in hectares of each EVC—that is, that part of the pre-1750 distribution where indigenous vegetation is currently present for the investigation area.

Column 6:
Current extent in protected area system (reserve)

Total current extent in hectares of each EVC in existing public land use categories that comprise the protected area system.

Column 7:
Current extent in other public land

Total current extent in hectares of each EVC in existing public land use categories outside the protected area system.

Column 8:
Current extent in private land

Total current extent in hectares of each EVC in private land.

Column 9:
Current protected area system (reserve) as % of current extent

Percentage of each EVC in the current protected area system (column 6) compared to current extent (column 5) in the investigation area.

1	2	3	4	5	6	7	8	9
EVC	EVC Name	BCS	Pre-1750 extent (ha)	Current extent (ha)	Public land Reserve (ha)	Other public land (ha)	Private land (ha)	Reserve % of current extent
159	Clay Heathland/Wet Heathland/Riparian Scrub Mosaic	D	845.78	478.59	157.79	0.75	320.05	32.97
31	Cool Temperate Rainforest	E	29.50	27.22	18.26	0.50	8.46	67.10
164	Creekline Herb-rich Woodland	V	312.07	62.88	0.00	0.00	62.88	0.00
29	Damp Forest	LC	6035.88	3744.39	138.77	218.17	3387.45	3.71
793	Damp Heathy Woodland	D	2054.19	828.61	22.77	18.17	787.67	2.75
56	Floodplain Riparian Woodland	E	610.07	228.59	4.50	37.99	186.11	1.97
22	Grassy Dry Forest	LC	324.20	232.83	109.94	0.00	122.88	47.22
128	Grassy Forest	V	3635.21	1075.10	2.02	5.00	1068.08	0.19
20	Heathy Dry Forest	LC	59.66	58.92	0.05	0.00	58.87	0.09
23	Herb-rich Foothill Forest	LC	3308.41	1614.71	322.60	36.48	1255.64	19.98
16	Lowland Forest	LC	12,763.03	7180.08	279.51	236.19	6664.38	3.89
55	Plains Grassy Woodland	E	0.27	0.03	0.00	0.00	0.03	0.00
17	Riparian Scrub/Swampy Riparian Woodland Complex	V	3058.85	1764.61	18.98	21.30	1724.34	1.08
18	Riparian Forest	LC	2193.17	1624.16	203.20	589.94	831.03	12.51
59	Riparian Thicket	V	469.98	317.81	67.86	30.97	218.98	21.35
45	Shrubby Foothill Forest	LC	4838.58	1789.06	27.43	37.37	1724.26	1.53
83	Swampy Riparian Woodland	V	367.35	207.14	45.95	41.06	120.13	22.18
126	Swampy Riparian Complex	E	5510.18	1371.14	174.56	74.54	1122.04	12.73
47	Valley Grassy Forest	V	3276.73	709.52	4.03	7.27	698.22	0.57
127	Valley Heathy Forest	V	101.22	75.50	0.00	0.35	75.15	0.00
30	Wet Forest	LC	1577.59	1191.94	92.72	45.95	1053.27	7.78
998	Water Body - man-made			2.75	0.00	2.75	0.00	0.00
	Total		51,371.90	24,585.60	1690.94	1404.75	21,489.91	6.88

4 Appendix

Current protected areas on public land in the Yellingbo investigation area

	Area (ha)
Nature conservation reserve	
Coranderrk Nature Conservation Reserve	144.4
Sassafras Creek Conservation Reserve	192.9
Warramate Hills Nature Conservation Reserve	490.1
Yellingbo Nature Conservation Reserve	661.4
Trust for Nature protected area	
Emerald	4.2
Wanderslore Conservation Reserve (Launching Place)	10.1
Natural features reserve – Natural and scenic features area	
Olinda (Harold St) Scenic Reserve	0.1
Natural features reserve – Streamside area	
Dee River Streamside Reserve	9.1
Woori Yallock Creek Streamside Reserve	1.6
Yarra River Streamside Reserve (Everard Park)	10.0
Natural features reserve – Bushland area	
Badger Creek Bushland Reserve	1.9
Beenak Bushland Reserve (G180)	125.7
Britannia Creek Bushland Reserve (G181)	1.8
Britannia Creek Bushland Reserve (G182)	5.8
Clematis Park (Emerald) Bushland Reserve	1.5
Cockatoo Natural Interest Reserve	2.3
Emerald Bushland Reserve (Hogan Park)	2.1
Ferny Creek Natural Features Reserve	1.3
Garden Estate (Cockatoo)	8.3
Haileybury College Camp Site (Cockatoo)	3.5
Hoddles Creek Bushland Reserve	3.9
Kallista Bushland Reserve	1.6
Launching Place Bushland Reserve (G178)	0.6
Lone Star Creek Bushland Reserve	0.8
Lyrebird Haunt Bushland Reserve	4.7
Menzies Creek Bushland Reserve	0.6
Mount Majestic Bushland Reserve	3.4
Nangana Bushland Reserve (G175)	1.1
Nathania Springs Creek Reserve	1.5
Olinda Bushland Reserve (G165)	2.9
Olinda Bushland Reserve (G167)	1.0
Picnic Hill Bushland Reserve	8.9
Sassafras Creek Bushland Reserve	0.7
Sassafras Bushland Reserve (G163)	0.3
Sassafras (Panteg Road) Bushland Reserve	0.4
Symonds Road Bushland Reserve (Avonsleigh)	2.0
Wandin Yallock (Queens Rd) Bushland Reserve (G64)	4.0
Wandin Yallock Bushland Reserve (G173)	1.0
Wattle Creek Bushland Reserve	2.9
Wattle Creek Reserve (Avonsleigh)	1.7
Woori Yallock Bushland Reserve (G161)	1.4
Wright Forest Bushland Reserve (Avonsleigh)	111.2

Note:

All or part of these sites are not formally reserved for conservation purposes, but are managed in accordance with the government accepted Land Conservation Council recommendations. The bracketed letter/number (e.g. G161) refers to the relevant LCC recommendation (see www.veac.vic.gov.au for LCC reports)

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